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Construct validation for two measures of loneliness.

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CONSTRUCT VALIDATION FOR TWO MEASURES OF LONELINESS

by

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B. A. University of Waterloo, 1977

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ABSTRACT

Research into the problem of loneliness has been increasing rapidly in the past few years. The ability to make a valid and reliable assessment of loneliness is a prerequisite for empirical investigation into this phenomenon.

The purpose of the present study was to examine and compare the construct validity and psychometric properties of two measures of loneliness. The UCLA Loneliness Scale (ULS) is a widely used unidimensional measure of general loneliness. The Differential Loneliness Scale (DLS) is a multidimensional scale composed of four subscales designed to assess dissatisfaction in the areas of romantic/sexual, friendship, family and community relationships.

As well as examining the construct validity of these two scales, the author tested the explanatory powers of each in two specific areas of inquiry, and assessed their relative strengths. The relationship between loneliness and stress-related symptoms was examined, and foreign students were compared to native students in their responses on loneliness measures.

Subjects were 208 Introductory Psychology students at the University of Windsor. Groups of these subjects answered a questionnaire containing the two loneliness scales, several rating scales for subjects to rate themselves on various aspects of their social situations, and an inventory of stress-related symptoms.

The results of the present study tend to substantiate the construct validity of both the ULS and the DLS. Both scales were found to have high internal consistency and to correlate positively with each other and with self-rated loneliness, and negatively with self-rated social satisfaction.

Sex differences were found in responses to both scales, with the scores of men indicating greater loneliness than those of women. The scores of foreign students indicated greater loneliness than those of native students. Scores on both scales correlated highly with those on a measure of health and stress, in which women reported greater frequency of stress-related symptoms than men.

The results confirmed that loneliness is a serious and pervasive problem among university students. Twenty-seven percent rated themselves as lonely. Students were found to be more dissatisfied and preoccupied with romantic/sexual relationships than with other relationships. Friendships were the second greatest source of dissatisfaction and the most important determinant of general loneliness. Lonely students were more likely than others to suffer emotional types of stress-related symptoms. They were more likely to perceive others to be more socially satisfied than they, and to perceive themselves as being less satisfied presently than they were a year ago. They were also likely to have recently undergone what they considered to be a change for the worse in their social situations.

As measures of general loneliness, the two loneliness scales appeared to perform equally well, both showing the capacity to serve as valid primary tools in the investigation of loneliness. However, it was found that the DLS provided a greater amount of interpretable information than did the ULS. On the basis of this finding, it was concluded that the multidimensional nature of the DLS enables a new depth of investigation to be undertaken which exceeds that possible within the unidimensional approach.

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CHAPTER I

INTRODUCTION

Loneliness is an experience with which everyone is familiar. Perhaps its commonness is why it was neglected in the psychological literature for so long. The last few years, however, have seen this topic develop and bloom as an important area of investigation. While loneliness is familiar to us all as an occasional unpleasant experience, to many it is seen as a relentless, distressing condition which leaves their world constantly unsettled. Loneliness appears to be disrupting the lives of a great many people in very serious ways, and uncovering this pervasiveness has highlighted the importance of this new line of investigation.

As with any new line of investigation, data collection was one of the first issues to be dealt with by loneliness researchers. Loneliness was found to be a difficult construct to assess adequately This difficulty pointed to the need for the development of valid and reliable measures. The measures which have been developed have served as the primary tools in the empirical exploration of this fledgling field, and as such, play a crucial role in the whole endeavor to build a knowledge of this phenomenon. In light of their critical position in this new and growing area, these measures deserve careful attention and scrutiny. It was the purpose of the present study to provide such attention, in the examination, testing and comparison of two important loneliness scales.

The two scales which were examined are important in different

ways. The Revised UCLA Loneliness Scale (Russell, Peplau & Cutrona, 1980) is currently the dominant measure in loneliness research, being by far the most widely used and accepted of the loneliness measures. Although the original UCLA scale was compared to one other measure (Solano, 1980), the present study marks the first time the revised version has been put to such a test.

The Differential Loneliness Scale (Schmidt & Sermat, 1983) is a unique and promising scale which is presently undergoing publication. It is important in that it is the first scale to be based explicitly on a conceptual model of loneliness which identifies specific relational dimensions in which loneliness might be experienced. As a multidimensional scale, it thus promises to add new depth to inquiry into the problem. Although this was originally a 60-item scale, the present study uses a newly developed shorter version. While the original version has been found to be a reliable measure with both substantive and structural validity, the shortened version has yet to be fully evaluated.

Two different approaches to the measurement of loneliness, unidimensional and multidimensional, are represented by these two scales. Although their performance has not previously been compared, multidimensional scales are potentially sensitive to variations in the experience of loneliness which could not be identified by a unidimensional measure. The ability to identify these variations would be particularly useful on the practical level of helping lonely people. For this reason, the development of an adequate multidimensional measure would be a significant achievement in the area of loneliness research.

One of the shortcomings of previous multidimensional measures has been the need for greater clarity in their underlying theoretical conceptualizations. It appears that the Differential Loneliness Scale may satisfy this need for a clear conceptual basis. The present study provides both data to aid in the further development of the scale (shortened version) and a preliminary indication of its efficacy.

Of the two scales presented above, one already has made, and the other seems likely to soon make, a big impact in the area of loneliness research. For this reason, a careful examination of the construct validity of these measures is both necessary and desirable at this time. The more that can be known about these instruments, the more effectively they can be used, and the more they can contribute to a greater knowledge of the problem of loneliness.

The Problem of Loneliness

Loneliness has recently been gaining increasing recognition as an important personal, social, and clinical problem. Indications of the extent of this problem have come from numerous surveys of both the general adult population and various selected populations. While inquiring about loneliness in various ways, these surveys have been reported to show considerable agreement that loneliness is a serious personal problem for between ten and thirty percent of the general population (Bradburn, 1969; Weiss, 1973; Bragg, 1979 ; Rubenstein & Shaver, 1980). Although certain segments of the population may be particularly affected, loneliness appears to be quite widespread.

The potential consequences of loneliness are beginning to be recognized in terms of psychological, social, and economic costs.

Loneliness has been linked to a variety of serious individual and social problems (see Appendix A). As these potential consequences are identified, the necessity to address loneliness as a problem for society becomes more apparent (Wood, 1978). The exponentially increasing rate of empirical research into loneliness testifies to the growing recognition of this problem.

While empirical research into loneliness has been undertaken only recently, loneliness has long been recognized as a significant clinical problem. Harry Stack Sullivan suggested in 1953 that loneliness could be a more powerful force than anxiety in the shaping of personal life. In 1959, Fromm-Reichman agreed with Sullivan, and stated her suspicion that loneliness plays an essential role in all psychopathology. Research and theory from many perspectives in psychology show a strong and growing emphasis on the importance of relational factors in human problems. Indeed, high percentages of users of psychiatric and counselling services are reported to cite loneliness as one of their main problems, many identifying it as their primary reason for seeking help (Middlebrook, 1980).

The impact of loneliness is felt beyond just the social sphere of experience. Loneliness may exacerbate, or even develop into, more recognized psychological problems, such as depression (Bragg, 1979; Young, 1981; Sadler, 1978), or even physical problems such as heart disease (Lynch, 1977). In fact, it seems evident that loneliness may play a significant role in complicating or worsening many forms of psychopathology, and that a non-lonely person is likely to recover from such problems much more easily.

Vulnerability to Loneliness

While loneliness appears to be a widespread problem, several segments of the population have been identified as being particularly vulnerable. These include the elderly (Perlman, Gerson & Spinner, 1978), the widowed or divorced (deJong-Gierveld, 1978), the hospitalized, prisoners (Weiss, 1973) and many other groups in various degrees of forced isolation. Loneliness is a diverse and complex experience, and each group may be prone to its own particular type or form of loneliness.

Surprisingly, one group included as being particularly vulnerable to loneliness is college or university students. Loneliness may be an even more pervasive problem for students than for the general population (Bragg, 1979; Jones et al., 1981). Loneliness has been reported as one of the most common problems of students seeking aid at Stanford University (Middlebrook, 1980) and at UCLA (Bragg, 1979), where nearly half of the students surveyed indicated that loneliness was a serious problem for people in their age group.

The most striking finding of Rubenstein and Shaver's (1980) survey of two large Northeastern cities was that even elderly respondents were significantly less lonely than young respondents. They also reported an earlier investigation of four stages of adult life, beginning with graduation from high school. Findings showed that the youngest (college aged) subjects were the loneliest. On the basis of the corroboration of their own consistent findings with those of several others, they suggest that loneliness is mainly a problem for the young (college aged).

In trying to explain these findings, they refer to Erikson's (1950) theory of psychosocial development. From Erikson's theory, the characteristic crisis of young adults is "intimacy vs. isolation", in which the primary concern is in establishing an intimate relationship. As a result, people in this age group are especially concerned about being "unattached". Also, the frequent discrepancy between their actual relationships and their developing notion of ideal intimacy leads to pain, disappointment, and feelings of loneliness.

Even though young people may generally be more prone to loneliness than older people, it is still puzzling that young people going to college or university should also, as a group, be lonelier than the general population. Unlike the lonely person who is physically isolated from others, university appears to offer the lonely student a very rich social environment. The social lives of most students are relatively unencumbered by parental supervision or marital or vocational commitments. In an environment of unattached and potentially available friends, dates and partners, the lonely student seems to feel interpersonally deprived.

Although seemingly paradoxical, it may be that this very availability of potential contacts highlights a student's loneliness. To be lonely in such a situation may be taken by the student as a sign of social failure and thus reduce self-esteem, making social presentation even more difficult. Also, one way a person evaluates his/her own relationships is by comparing them to those of similar others (Peplau & Caldwell, 1978; Russell et. al., 1981). In a highly social environment like a campus, the student would be exposed to a great deal of

social activity among similar others. In such an environment, dissatisfaction with current relationships as a result of social comparison is much more likely. According to Schmidt and Sermat (1983), with such dissatisfaction comes vulnerability to loneliness.

What is Loneliness?

In outlining a conceptual model of loneliness, it may be helpful to begin by differentiating loneliness from other conditions or experiences. Such delimitations have been offered by various authors. Loneliness has been distinguished from aloneness or solitude, and from social isolation, which is an easily quantifiable condition and therefore more easily researchable (Chelune et. al., 1980; Peplau & Caldwell, 1978; Weiss, 1973; Schmidt, 1976 ; Sadler, 1978; Sermat, 1980). It has also been distinguished from alienation (Sadler, 1978).

Loneliness is often confused with depression, since the two states frequently co-occur and measures of the two are found to correlate substantially. However, a clear distinction has been made between loneliness and depression (Russell et. al., 1978, 1980, Weeks et. al., 1980; Weiss, 1973; Schmidt, 1976). Several points of distinction are reviewed in Appendix B. Although interpersonal problems are often associated with loneliness, they likewise cannot be equated with it (Horowitz et. al., 1979). Other similar experiences, such as grief and separation anxiety, have also been distinguished from the experience of loneliness (Weiss, 1973; Applebaum, 1978).

Attention will now be turned to briefly outlining a conceptual model of loneliness. The following guidelines and definition form the basis for this model.

First, loneliness is a state, not a trait. If it were a trait, all lonely people would be chronically lonely. Although loneliness can confidently be said to be a state in situationally lonely people, there are no grounds for assuming that loneliness is a trait in chronically lonely people. Chronic loneliness may reflect long-term situational factors. However, loneliness as a state can be influenced in severity and duration by various traits which are distinct from the experience itself. Thus, it is important to take characterological factors into account, while keeping them conceptually differentiated from the state of loneliness.

Second, loneliness is a subjective, rather than an objective state. This is what distinguishes it from such objective conditions as aloneness or isolation. Loneliness cannot be described as an objective condition (i.e. absence of social relationships).

Third, loneliness involves a deficit condition. In particular, it involves a deficit in relationships. Weiss (1973) has termed what one gets that sustains one in a relationship, "relational provisions". He has further termed the absence of specific relational provisions a "relational deficit". Reference to "specific" relational provisions implies different types of them. Indeed, as will be seen below, loneliness can occur in response to deficits in different types of relationships.

Finally, loneliness has both a cognitive and an affective component. Both the felt experience and the cognitive assessment of it contribute to the overall state.

As can be seen from the above, a satisfactory definition of loneliness must satisfy several requirements. It must present loneliness

as a subjective experience. It must acknowledge both the affective and cognitive components of the experience. It must also present loneliness as involving a relational deficit.

While a relational deficit is involved, the experience of loneliness is a subjective response to that deficit, and not the deficit itself. Loneliness, then, is a response to a perceived relational deficit. This response involves, first, a sense or feeling of deprivation (loss or lack), and second, a drive to reduce the deprivation.

The preceding guidelines have led to the following definition of loneliness: Loneliness is a compelling sense of deprivation arising from a perceived relational deficit. This definition is exclusive, in that it distinguishes loneliness from all other subjective experiences. It is also recognizable and parsimonious. The word "compelling" was chosen to represent the driven, restless quality of the experience; the sense of deprivation involved is not a passive one (although repeated failure to reduce this deprivation over time may lead to feelings of defeat and depression, according to Bragg, 1979 , and Perlman & Peplau, 1982). In this definition, the phrase "a compelling sense of deprivation", as well as implying subjectivity, designates the affective component of loneliness. The phrase, "perceived relational deficit" designates the cognitive component, which both underlies and is influenced by the affective response.

The compelling sense of deprivation, or the affective component of loneliness, is described in terms such as, "a total and often acute feeling", "encompassing", "painful", "sense of emptiness", "feelings of boredom, restlessness, aimlessness", and "an exceedingly unpleasant and driving experience". It can manifest itself in the

person's life in any number of ways, depending upon the person's character. The sense of deprivation is often stressful and can result in the appearance of symptoms usually associated with stress, such as emotional or physical complaints. The stress is induced in part by the agitation resulting from feeling compelled to do something and not knowing what, or not being able to. It can be thought of as the strain of needing something and not being able to find it. This strain may be compounded by various characterological factors, such as the tendency toward self-blame or low self-esteem, which would lead the person to attribute the loneliness to social failure. In such a case, every social interaction or activity may become an anxiety arousing situation.

The affective component of loneliness may be quite puzzling to those who like to think of themselves as strong and independent. While experiencing distress and wondering what is wrong with them, such individuals may be unwilling to acknowledge any social needs or inadequacies. They may be willing to admit that they "haven't been themselves lately", but would not rate themselves as being lonely. A multi-item, covert loneliness measure is much more likely to give an accurate representation of these people than a simple self-rating question.

Both the affective distress and the compelling nature of loneliness make social considerations very prominent in the lonely person's life. Finding a satisfying relationship and escaping from the loneliness becomes a high priority. As a result, lonely people often have difficulty concentrating on non-social activities and may seem constantly preoccupied. This distractibility, especially in a socially

active environment like a university campus, would be expected to be detrimental to study practices and thus to academic performance.

The driven quality or restlessness described above distinguishes the affective experience of loneliness from that of depression. However, with this exception, descriptions of the affective component of loneliness cannot be easily distinguished from descriptions of similar, negative emotional states.

The cognitive component is represented as an underlying awareness or perception of loss or lack in one's relationships. This component involves a recognized discrepancy between desired or expected relationships and achieved, present relationships. It is this cognitive perception of relational deficit which distinguished loneliness from other experiences.

Sermat (1978), described loneliness as involving an experienced discrepancy between the kinds of interpersonal relationships one perceived oneself as having at the time, and the kinds of relationships one would like to have. A similar stance was taken by Peplau and Caldwell (1978), who proposed that loneliness exists to the extent that one's network of social relationships is smaller or less satisfying than one desires.

Subjective evaluation of relational adequacy involves a comparison between present "achieved relationships" (ARs) and "desired relationships" (DRs). If ARs and DRs match, the person perceives relational adequacy. If ARs are less than DRs, then the person perceives a relational deficit.

The cognitive component of loneliness, then, involves an ongoing

process of comparison between the two variables, achieved and desired relationships. When the comparison indicates a discrepancy, a relational deficit is perceived. This discrepancy can occur in two ways. First, the level of achieved social interactions, or the quality or quantity of ARs, can go down. Second, the level of desired social interactions, or the quality or quantity of DRs, can go up. Of course, both could happen at the same time, with even worse results.

Peplau and Caldwell (1978) identified four major types of events which can lead to reduced ARs, and four more which can lead to increased DRs. ARs can be reduced by: 1) the ending of a close emotional relationship (i.e. through death, divorce, or the breakup of a dating relationship), 2) physical separation from family and friends (i.e. through moving, hospitalization, or imprisonment), 3) status changes (i.e. retirement or unemployment), and 4) reduced satisfaction in the qualitative aspects of one or more relationships. DRs can be increased by: 1) a task, physical setting, or mood which encourages social interaction, 2) personal expectations that positive social interactions are feasible or likely in a given situation, 3) social norms dictating high ARs, and 4) social comparison processes pointing out "lower than theirs" ARs.

To review, the cognitive component of loneliness involves the perception of relational deficit in the form of a discrepancy between ARs and DRs. This discrepancy can be caused by either a decrease in ARs or an increase in DRs.

By implication, a relational deficit can be perceived in the absence of any objective relational change (i.e. DRs can increase while

ARs stay the same). Likewise, ARs can change without any subjectively perceived relational deficit (i.e. DRs can decrease as ARs decrease). This may help to explain why measures of ARs (i.e. social isolation) have been found to be poor predictors of loneliness (Peplau & Caldwell, 1978). ARs alone could not be expected to predict loneliness, since relational deficit is perceived only as a discrepancy between ARs and DRs.

In the present definition of loneliness, it is from the perception of relational deficit that the affective component arises. However, the affectively experienced sense of deprivation also has a strong influence on DRs. If the sense of deprivation, because of certain personality traits, leads to exaggerated emotional distress, DRs will be increased. Opposite tendencies may lead to lowered DRs. Thus the affective and cognitive components of loneliness are interactive, having a cyclic rather than linear relationship.

Types of Loneliness

Two contrasting approaches to the study of loneliness treat it as either a unidimensional or a multidimensional phenomenon. A unidimensional approach requires the assumption that, regardless of differences in situations and people, there are common themes in the experience of loneliness. Loneliness is seen, therefore, as a unitary, global phenomenon, varying primarily in its experienced intensity. Thus, uncovering essential commonalities and measuring quantitative differences are the most important aims from a unidimensional approach.

From a multidimensional approach, loneliness is viewed as a

multi-faceted phenomenon. The assumption here is that differences in situations and people are reflected in different manifestations of the experience of loneliness. Although they share some basic common properties, these facets of loneliness have relevant distinctions between them. Determining and differentiating relevant dimensions, or types, and measuring qualitative differences are the primary aims of a multidimensional approach.

When a multidimensional approach to the study of loneliness is taken, consideration of different types of loneliness is possible. Thus, although each person's experience of loneliness is unique in some way, several important attempts have been made to filter this unlimited variation into identifiable categories. Various taxonomies of loneliness have been presented in the literature, each using a different rationale to distinguish between types. Three underlying themes in the discussion of different types of loneliness have been identified (Perlman & Peplau, 1982). These underlying themes deal with the nature (positive or negative), the source, and the duration of loneliness.

The "nature of loneliness" theme is exemplified by Moustakas (1961), who distinguished between existential loneliness (positive) and loneliness anxiety (negative). In Moustakas' view, existential loneliness involves periods of self-confrontation providing an avenue for self-growth, and can lead to positive experiences of "triumphant creation". Loneliness anxiety, on the other hand, is said to be a negative experience that results from a "basic alienation between man and man". Existential loneliness is further discussed in Appendix C.

The "duration of loneliness" theme sees types of loneliness distinguished temporally. For example, Young (1981) distinguished between

transient (brief and occasional), situational (brought on by a specific relational transition), and chronic (long term) loneliness. According to Young, the persistence of situational loneliness for long periods leads to chronic loneliness. Preventing situational loneliness from becoming a severe and chronic experience is thus the most important goal in terms of intervention.

The "source of loneliness" theme is the most common, and involves categorizing types of loneliness on the basis of the social deficit involved. Weiss (1973) provided the classic distinction between the loneliness of emotional isolation (the absence of an intimate, emotional relationship) and the loneliness of social isolation (the lack of social "connectedness" or sense of community). Sadler (1978) presented a more comprehensive dimensional model, identifying five types of loneliness, each based on a different source. These "dimensions of loneliness" include interpersonal, social, cultural, cosmic, and psychological loneliness.

Finally, Sermat (1978) considered the source of loneliness to involve dissatisfaction with one's social relationships. Four types of relationships thought to be particularly important were romantic-sexual relationships, friendships, family relationships, and group and community ties. Schmidt and Sermat (1983) were the first to develop a multidimensional measure of loneliness based purely on the "source of loneliness" theme. Their Differential Loneliness Scale was designed to yield both an indication of the relative satisfaction level in each of these four areas and an overall total score predictive of loneliness. While the Differential Loneliness Scale now offers a tool for a multi-dimensional approach to the study of loneliness, the unidimensional

approach has previously received more empirical attention. This has been largely a result of the availability of a reliable unidimensional measure, the UCLA Loneliness Scale. As figural components of these two approaches, each of these scales will now be reviewed.

Two Approaches to the Measurement of Loneliness.

1) The unidimensional approach:

The UCLA Loneliness Scale (ULS) is presently the most widely-used measure of loneliness. Since its original publication (Russell, Peplau & Ferguson, 1978), the scale has steadily increased in popularity. While usually used intact, shortened versions of the scale have also been found useful. Perlman, Gerson & Spinner (1978) used an 11-item version with senior citizens; and Gutek, Nakamura, Gahart, Handschumacher and Russell (in press) used a 4-item version devised for survey research. The ULS has recently been revised (Russell, Peplau & Cutrona, 1980) in an attempt to correct potential problems with the scale. The result is an easily administered, highly reliable measure which appears to be valid both in assessing loneliness and discriminating between loneliness and other related constructs.

Russell, Peplau and their colleagues began work on developing a measure of loneliness in 1976. At this time, several loneliness scales had been developed as doctoral dissertations (Bradley, 1969; Eddy, 1961 ; Sisenvein, 1964 ; Belcher, 1973), but none had been published or received much attention. These early scales suffered from a variety of problems which prevented their general acceptance. Russell et. al. (1978) saw the lack of a simple and reliable method of assessment as a major hindrance to loneliness research. What they

saw as a pervasive and severely distressing problem was being all but neglected by psychological researchers. They "sought to create a psychometrically-adequate, easily administered, and generally available scale that would serve as a stimulus for empirical research on loneliness" (Russell, 1982, pp. 16).

They decided to take a global or unidimensional approach to addressing loneliness and develop a general scale of overall loneliness, rather than attempting to identify different components or types of loneliness. In taking this approach, they hoped to be able to identify the common themes that characterized the overall experience of loneliness for a broad range of people.

In constructing a scale, an initial pool of 25 items was selected from the 75-item loneliness scale developed by Sisenvein (1964). Individuals were asked to rate, on a 4-point scale from "never" to "often", how frequently they felt the way described (e.g., "I have nobody to talk to"). From this initial set, 20 items were chosen based on the correlation of each item to the total loneliness scale score. All selected items had correlations of over .50 with the total score.

The resulting 20-item scale was found to have high internal consistency with a coefficient alpha of .96.. Its validity was assessed in three ways. First, participants were asked to indicate how lonely they were compared to others on a 5-point Likert scale. A correlation of .79 was found between these responses and the total score on the loneliness scale, indicating that high scorers on the loneliness scale described themselves as more lonely than other people. Second,

loneliness scores of a "clinic sample" of volunteers identifying themselves as feeling lonely were compared to the scores of the general "student sample" of undergraduates. The mean score for the clinic sample (60.1) was significantly higher than the mean for the student sample (39.1). Third, scores were found to be strongly related to the reported intensity of feelings thought to be associated with loneliness, such as anxiety, unhappiness and shyness; and unrelated to self-ratings thought to be conceptually distinct, such as "hard-working" and having "wide-interests".

Although subsequent research provided further confirmation of the scale's high internal consistency, good test-retest reliability, and adequate validity, several apparent weaknesses remained. The issues of response bias, social desirability and discriminant validity were each addressed as potentially problematic for the scale.

Response bias was a possible problem because all of the items were worded in the same negative or "lonely" direction. Scores could be systematically influenced by a consistent tendency to respond either positively or negatively. The social stigma attached to loneliness makes it undesirable to appear to be lonely (Gordon, 1976). Social desirability was thus a potential problem which may have led to responses being distorted to downplay loneliness. Discriminant validity posed a difficulty because of the magnitude of the empirical relationships found between loneliness scores and scores from measures of depression and self-esteem. It was necessary to demonstrate that the loneliness scale was distinct from these other measures, even though the relationships between these constructs seemed quite reasonable.

In order to confront these problems, the UCLA Loneliness scale was revised (Russell, Peplau & Cutrona, 1980). A set of 19 positively-worded items were written to reflect as nearly as possible the opposite of the original negatively-worded items. For example, the new item, "I do not feel alone" reflects a positive rewording of the original item "I feel completely alone". Ten items were chosen from this new positively-worded item pool, and ten from the original scale, on the basis of their correlations with a 6-question loneliness self-labelling index. All selected items had correlations above .40 with this index.

Internal consistency for the revised scale was found to be comparable to that of the original scale, with a coefficient alpha of .94. Concurrent validity was demonstrated by correlations in the expected directions between scores on the revised scale and measures of various emotional states. People who scored lonely on the scale reported experiencing emotions theoretically linked to loneliness (eg. empty, hopeless), and did not report experiencing emotions negatively related to loneliness (eg. sociable, satisfied) or conceptually distinct (eg. embarrassed, surprised). Loneliness scores were also significantly related to social activities and relationships, which were more limited for lonely people.

The discriminant validity of the revised ULS was examined and demonstrated in a variety of ways. Scores on the scale were found not to be related to scores of social desirability. They were also found to correlate more highly with the self-labelling loneliness index than with other measures of mood and personality variables, such as dep-

ression and self-esteem. Although several of these mood and personality variables were substantially correlated with loneliness, the relationships between loneliness and the concurrent validity criteria (discussed above) were demonstrated to be independent of their influence.

In summary, the revised ULS appears to have retained the strengths of its predecessor while avoiding or adequately addressing the potential weaknesses of response bias, social desirability and discriminant validity. It remains appealing as an easily administered, highly reliable measure of loneliness. The high correlation (.91) between the original scale and the revised version suggests that previous findings (based on the original) should still be valid for the revised scale.

2) The multidimensional approach:

An entirely different approach to the development of a scale for the measurement of loneliness was taken by Schmidt and Sermat (1983). In 1969, Weiss wrote about the "functional specificity of relationships", maintaining that "individuals have needs which can only be met within relationships, that relationships tend to become relatively specialized in the needs for which they provide, and as a result individuals require a number of different relationships for well-being" (p.38).

From this premise, Schmidt and Sermat realized the necessity of examining the quality of a number of different relationships when studying loneliness. They viewed the ULS as a general distress measure which indicated deficiency in interpersonal relationships, but which gave little information about the source or nature of that

deficiency. Their aim was to go beyond a general measure and develop a scale based explicitly on a conceptual model of loneliness which identified specific areas and dimensions of relationships where loneliness might be experienced.

The resulting Differential Loneliness Scale (DLS) is based on the definition of loneliness as a subjectively felt discrepancy between the kinds of relationships the individual perceives himself as having, and the kinds he would like to have. Rather than asking about feelings of loneliness, the items on the DLS use a "true-false" format to inquire about the extent of satisfaction or dissatisfaction with a number of specific relationships and aspects of interaction.

The four types of relationships addressed in the DLS are romantic-sexual relationships, friendships, relationships with family and relationships with larger groups or the community. Dissatisfaction with any particular relationship might stem from a specific aspect of interpersonal interaction, such as communication, perceived evaluation, cooperation, problems of approach and avoidance, or the complete lack of that type of relationship. These five aspects of interaction (interaction dimension) and the four types of relationships (relationship dimension) mentioned above comprise the two orthogonal dimensions in the conceptual model of the DLS.

The initial item pool for the DLS contained 320 items developed by the authors based on data from a variety of sources. Four subscales from the personality measures of Jackson (1967, 1971, 1976) were used to select, from these items, those which would have the greatest validity. Depression, anxiety, self-esteem and social desirability subscales were employed, since these had been previously found to correlate

highly with loneliness. Therefore, items were chosen from the initial DLS pool only if they had a higher correlation with the total loneliness scale than with any of the Jackson subscales. These items were then ranked according to the magnitude of their biserial correlation with the total score, and the best 60 items for each of two subject populations were selected. Thus, two versions of the scale were constructed, one based on a student sample, the other on a non-student sample.

The construction of the DLS as a measure of loneliness was unique in many ways. For example, item analyses were employed to enhance the discriminant validity and structural integrity of the scale as a measure of loneliness. Item selections were made on the bases of lessening content saturation due to depression, anxiety and self-esteem, minimizing the response style bias of social desirability, and maximizing homogeneity. In further contrast to most earlier loneliness scales, the words "loneliness" and "lonely" do not appear, and any implications of personal inadequacies or emotional problems are minimized by the form of the items. Items were written to describe positive as well as negative features of relationships so that any response set bias would be minimized. Also unique was the development of two separate forms of the scale, one based on a student sample and the other based on a non-student, adult sample. Thus there are two versions of the DLS, each suited to a particular population.

Preliminary results reported by Schmidt and Sermat (1983) indicated KR-20 internal consistency coefficients for both the student and non-student versions of the scale (60-items each) to be .90 and .92

respectively. Test-retest reliability for the student version was assessed over a one month period and found to be .85 and .97 for males and females, respectively. Factor analysis revealed that, in both versions, the first four principle components were clearly related to the "relationships" dimension of the original conceptual model. This was considered empirical evidence which supported treating the four categories of the "relationships" dimension of the DLS as subscales.

The advantage of the DLS is its ability to examine dissatisfaction with specific types of relationships, rather than dissatisfaction in general. This advantage was used by Schmidt and Sermat to determine how dissatisfaction with each type of relationship correlated with self-reported loneliness. When someone reports that they are lonely, that may indicate a deficiency in a particular type of relationship, or in all of their relationships, and it could be valuable to be able to determine which is the case. For example, Schmidt and Sermat reported that, of the DLS subcategories, dissatisfaction with friendships showed the highest correlation with the self-reported loneliness of college men, while dissatisfaction with family relationships showed the lowest. In other words, someone who is dissatisfied with their friendships is more likely to report feelings of loneliness than is someone who is dissatisfied with family relationships.

Since individual items in the DLS each point to a level of dissatisfaction with a certain relationship, these items can be used to locate the area of greatest vulnerability to loneliness. They can also provide a base for inferences about the predominant problems being experienced at certain ages or in certain relationships.

In summary, the DLS is a result of scale development based explicitly on a conceptual model of loneliness which identified specific relational dimensions in which loneliness might be experienced. It was designed to assess the quality of four areas of interpersonal relationships: 1) romantic-sexual, 2) friendship, 3) family, and 4) social groups and larger communities. It is meant to function as an overall indicator of how satisfied or dissatisfied a person is with his/her social relationships. Frequent expression of dissatisfaction or lack in certain relationships is assumed to indicate vulnerability to loneliness.

The DLS appears to be a reliable measure with substantive and structural validity and should prove to be of value in the differential prediction of loneliness. Further empirical examination of the DLS is required before its full value can be assessed.

Abbreviated student form:

More recently, Sermat (Personal communication, December, 1982) has endeavoured to abbreviate the student scale to 20 items in order to increase ease and convenience of administration.

From the 60 item student scale, the best 20 items were chosen in two different ways. First, the five items from each of the four subscales with the highest biserial correlations with the total score were combined and will be collectively referred to as "version 5x4" (V5x4). Second, ignoring subscales, the best 20 items overall were selected to yield "version 20" (V20). V5x4 was thus balanced across subscales, with five items in each, while V20 was found to contain six items in the "friendship" subscale, four in the "community ties"

subscale, and five in each of the other two. Altogether, only seven items were found to differ between the two versions.

At the time of the present study, the two versions had not yet been tested against each other, and so neither had yet been adopted as the "official" abbreviated student form of the DLS. Conceptually, V5x4 is the version which best represents the dimensional characteristics of the DLS. However, since V20 was found to be so close to being balanced across subscales, it retains most of the dimensional separation for which the scale was designed.

Thus, two abbreviated versions of the student form of the DLS were compared in order to determine if either had advantages over the other. This was simply done by presenting 27 items on the DLS rather than 20, and then extracting the relevant data for analysis. The aim was to be able to recommend one form as the version to be used to represent the DLS in further research.

Examining Loneliness Measures

The inability to reliably assess loneliness was for many years a major hindrance to research in this area. The current availability of measures such as these reviewed above has enabled empirical research on loneliness to be seriously undertaken. While several loneliness measures have been devised in past years, only a few have actually been published, and those very recently (see Russell, 1982, for a full review).

With an important and fast growing area of research relying on the results of their use, these measures demand careful examination. By the time of publication, each measure has typically been found by

its authors to demonstrate certain standards of reliability and validity, especially in its relationship to various selected criteria. With the appearance of different loneliness scales in the literature, another valuable testing procedure becomes available. The scales can be compared with each other.

Solano (1980) noted the usefulness of examining the relationship between different measures of loneliness as a means of clarifying what each is measuring. He compared the popular UCLA Loneliness Scale (ULS; Russell, Peplau & Ferguson, 1978) with the Belcher Extended Loneliness Scale (BELS; Belcher, 1973), which, at the time, was the best developed of the other loneliness measures. The BELS was considered a multidimensional measure composed of four subscales: a single-item global loneliness scale, a 35-item general loneliness scale, a 5-item anomie scale, and a 19-item alienation scale. Anomie was defined as the feeling resulting from a lack of social norms, and alientation as the feeling that results when the existing norms have been rejected. From the description of the subscales, it is clear that this measure does not actually tap different dimensions within the experience of loneliness, but rather includes presumably related constructs as well. However, the BELS was chosen as a comparison measure because it had been shown to have high test-retest reliability and had been validated on college and non-college populations.

The ULS and the BELS were compared on internal consistency and both found to be high. Both were also found to correlate well with the single-item self-rated "global index", and with the same magnitude ($r=.62$).

A third comparison was made concerning how the two measures revealed sex differences. The UCLA scale did not show sex differences, while the BELS did, showing that males, on average, were more lonely than females. A final correlation was made between the ULS and the BELS subscales in order to characterize the content of the UCLA measure. From an examination of most highly correlated items, it was concluded that the UCLA scale primarily addresses a subjective lack of social companionship, which Weiss (1973) called social isolation. It also appeared that this lack of social companionship was strongly evident in the experience of those college student who labelled themselves as "lonely".

Solano concluded that the two measures he compared appeared to perform equally well, although each had its own problems. Since the time of his study, however, the ULS has been revised, and several of its problems have been corrected. The revised version continues to be widely used. The Belcher scale, with the conceptual uncertainty about how certain subscales relate to loneliness, has not received as much attention. It is still, however, used occasionally.

The Present Study

As more and more attention becomes directed toward loneliness research, there is a growing reliance on loneliness measures. For this reason, it is important to determine the strengths and limitations of these measures, and identify the functions to which they are best suited.

The purpose of the present study was to examine and compare two measures of loneliness, one unidimensional and one multidimensional, in order to determine more precisely the utility of each. The two measures were examined, the unidimensional UCLA Loneliness Scale (ULS; Russell, Peplau & Cutrona, 1980; Russell, Peplau & Ferguson, 1978), currently the most widely used and accepted of the loneliness measures, and the recently released Differential Loneliness Scale (DLS; Schmidt & Sermat, 1983), a unique and promising multidimensional scale. These two measures were compared in terms of their internal consistency, their validity, and the nature and amount of information obtained by each.

While the two loneliness scales are intended to measure the same construct, they go about doing so in quite different ways. The ULS obtains an indication of feelings of general relational dissatisfaction, whereas the DLS shows dissatisfaction in several specific relational areas. The total scores of each scale are thus based on slightly different samplings of the subject's experience. For this reason, the correlation between the two scales was conceptually expected to be high, but not perfect.

A comparison was made between the ULS total score and the DLS

subscale scores, in order to determine how well each subscale correlated with independently assessed general loneliness. This also provided the opportunity to determine what types of relationships the ULS appeared to be tapping or not tapping in its assessment of general loneliness. Solano (1980) concluded that it primarily measured a subjective lack of social companionship. The ULS was therefore expected to relate most strongly to the friendship subscale of the DLS.

As well as being compared with each other, the two scales were each compared with the following social self-ratings to be obtained from direct questions:

1) Self-rated loneliness
2) Self-rated general social satisfaction
3) Self-rated dissatisfaction in four specific relational areas (the DLS relational dimensions)

These comparisons further tested the construct validity of the two scales.

Construct validity from social self-ratings

Based on the conceptual model of loneliness presented earlier, it was judged that construct validity would be demonstrated if the following hypotheses were supported:

1) Self-rated loneliness will correlate with scale-scored loneliness.
2) Self-rated social satisfaction will correlate negatively with scale-scored loneliness.
3) Self-rated dissatisfaction (as indicated by amount of desired change) in each type of relationship will correlate with dissatisfaction determined by the corresponding DLS subscales.

4) A discrepancy between past and present satisfaction will be predictive of loneliness scores, with an increase in satisfaction predicting less loneliness and a decrease predicting more.

5) A discrepancy between one's own and other's satisfaction will be predictive of loneliness scores, with greater perceived satisfaction for others predicting more loneliness.

The last two expectancies listed above (items 4 and 5) are based on the earlier stated model in which both past experience and social comparison processes are considered to be highly influential in determining relational dissatisfaction. People are dissatisfied if their present relationships aren't at least as good as the ones they've had before, and at least as good as those of the people around them. Subjects were asked to rate their own present and past social satisfaction and to rate how satisfied others around them seemed to be.

In addition to the preceding tests of validity, both scales were employed in two specific areas of inquiry in order to compare the predictive and explanatory powers of each. The information yielded by the new, multidimensional DLS was thus tested against that of the more established UCLA scale. The two areas of inquiry were 1) assessing loneliness in foreign vs. native students, and 2) examining the relationship between loneliness and psychosomatic symptoms. These two areas are thought to be representative of the kinds of issues to which these scales could be applied. Although these issues are of inherent interest, their primary function was to provide a testing ground upon which the scales could be more fully evaluated.

Loneliness and Foreign Students

The validity of the DLS as an indirect measure of loneliness has been supported by results of a "known groups" procedure, in this case comparing married and non-married subjects (Schmidt & Sermat, 1983). Findings have shown consistently higher DLS scores (indicating dissatisfaction in relationships) for single or separated subjects than for married subjects.

The "known groups" procedure was also used to validate the ULS. Russell et. al. (1978) found a "clinic sample" of lonely students to score significantly higher than the rest.

In the present student sample, a similar "known groups" comparison offers both some valuable comparative data and further scale validation. The known groups in this case are foreign vs. non-foreign or native students.

University students have been identified as population particularly vulnerable to loneliness. Foreign students, however, comprise one segment of the student population which may face an even higher risk of loneliness. M. Brewster Smith (1955) has pointed out some of the problems inherent in being a foreign student . These include problems relating to communication, learning the "cultural maze", gaining acceptance, balancing loyalties, maintaining personal integrity and self-esteem, and achieving academic goals. Thus foreign students often find themselves in situations which would be described as optimal for the development of loneliness. They have usually undergone a recent geographical move, separating them from family friends, relatives and community. Along with this major disruption of their social relation-

ships, they are confronted with an unfamiliar cultural milieu, where they may feel irrevocably different from those around them. In addition, they may find themselves with little time or opportunity for social activity. All these factors would seem to indicate that foreign students should be a "high risk" group for loneliness.

Comparisons between the loneliness measure scores of North American and foreign students have not been reported in the literature. However, cultural differences in the experience and expression of loneliness are currently starting to be explored. It may therefore be useful to have some data about how foreign students respond to measures of loneliness constructed for North American students.

The present study attempted to determine whether any measurable differences could be found between the experienced loneliness of foreign and native students. It did so by assessing loneliness through a wide range of inquiries, described fully in Chapter II.

Students new to the community can be expected to have fewer group and community ties than those who have lived in the community for some time. Therefore, it was judged that validational support for the DLS would be gained if the "groups and community" subscale measured greater dissatisfaction in recently arrived foreign students.

Loneliness and Psychosomatic Symptoms.

A good deal of evidence suggesting that loneliness is associated with poor mental health has been reported. Instruments such as the Tennessee Self-Concept Scale, Zung's Clinical Index of Potential Suicide, Eysenck's neuroticism scale, and structured psychiatric examinations have all been found to show this association (Perlman & Peplau, 1982). However, the association between loneliness and physical

health has received only limited attention.

Lynch (1977) was one of the first to report a link between loneliness and physical illness. While focussing primarily on the relationship between loneliness and heart disease, he also presented loneliness as one of the biggest causes of overutilization of health-care services. He pointed out how costly this problem was to both society and the individual. The tremendous cost to society of the overutilization of healthcare services involves both the financial drain and the exhaustion of valuable resources and services. This cost is a result of both the lonely person's tendency to report psychosomatic symptoms and the healthcare professional's availablility as someone to talk to "who cares". The cost to the individual arises in the possibility that the continued stress of prolonged loneliness may lead from psychosomatic symptoms to serious physical ailments (i.e. heart disease).

In a large scale survey done by Rubenstein and Shaver (1980), one of a broad range of findings suggested that lonely people were more troubled by psychosomatic symptoms than non-lonely people. They obtained correlations of .60 to .63 between self-rated loneliness and a composite index of health and stress which they developed. Although this suggested relationship is intriguing, it is not convincing. Since self-rated indications of loneliness are so vulnerable to distortion, it is possible that this apparent link was merely the result of extraneous factors, such as a tendency to complain about one's condition.

The link between loneliness and health care problems, if convincingly established, carries important treatment implications. It would be necessary for healthcare professionals to know as much as possible about such a link in order to best direct treatment.

The present study was thus an attempt to determine whether the link which has been suggested between psychosomatic symptoms and loneliness was actually found when loneliness was measured on a multi-item scale. Both the ULS and the DLS were used to obtain loneliness scores which were compared with the results of the Index of Health and Stress (IHS) used by Rubenstein and Shaver. The DLS was also used to indicate whether dissatisfaction with a particular type of relationship could be found to be more conductive to psychosomatic complaints.

The present study thus assessed the relationship between loneliness and psychosomatic complaints. The use of reliable, multi-item scales enabled a thorough analysis of the relationship to be undertaken. As stated earlier, loneliness is conceptually a stressful experience. It was therefore hypothesized that IHS scores would correlate with the scores of both loneliness scales. It was further hypothesized that lonely subjects (from ULS, DLS scores) would report more frequent use of health care services.

Additional Explorations

In addition to the above areas of examination, several additional points of interest were explored.

1) Demographic information. Indicative of achieved relationships, the following demographic information, according to the conceptual model presented in Chapter I, was expected to be predictive of loneliness scores: marital status, living arrangement, distance from parental home, length of time in Canada (for foreign students), and membership in social organizations.

2) Academic performance. Present, past, and expected future

average grades were compared to loneliness scores in order to more powerfully address the inquiry into the existence of a relationship between loneliness and academic performance. Such a relationship has not been clearly demonstrated. However, according to the conceptual model, such a preoccupying and stressful condition would be expected to distract one from one's studies. It was therefore hypothesized that a) lonely subjects would report a decrease in academic performance when past and present grades were compared, and b) lonely subjects, aware of their distraction, would expect their grades to improve again when they are no longer lonely.

3) Changing social situation. According to the model of loneliness presented in Chapter I, the onset of loneliness can be triggered by events which increase the perception of relational deficit. Such events are often marked by a change in the person's social situation, such as the breakup of a love relationship or moving to a new community. As well, the reduction and elimination of relational deficit, which occurs, for example, in the formation of a new relationship or the strengthening of an existing relationship, is incompatible with loneliness. Thus, a negative change in one's social situation is expected to result in greater loneliness, while a perceived positive change should lead to less loneliness. This seemingly "common sense" notion was tested empirically in the present study by inquiring about any recent changes in subjects' social situation, and inquiring about the direction (positive or negative) of any such change. It was hypothesized that subjects who report a recent change for the better would also report less than average loneliness, while subjects reporting recent changes for the-

worse would report greater loneliness.

4) In trying to account for gender differences in self-rated loneliness, Borys, Perlman, and Goldenberg (1982) suggested that women may respond to stressful situations with emotional, affective distress, while men may experience or report more somatic complaints. The present study offered the opportunity to test this possibility by checking sex differences in responses to the IHS. Of the 20 items in the Index, eight can be easily classified as emotion complaints (items 2, 7, 8, 9, 10, 14, 15, 17) and eight as somatic complaints (items 1, 3, 4, 5, 12, 18, 19, 20). It was judged that finding a sex difference in how frequently each type of complaint was used would support the suggestion offered above as one aspect accounting for the gender differences previously observed in self-rated loneliness.

Summary

The present research reports on the comparison of two loneliness measures, the ULS and the DLS. Correlations between the ULS and the DLS total scale, and between the ULS and each DLS subscaled were determined. Each was checked for internal consistency and correlated with various social self-ratings. Measures of relational dissatisfaction based on past experience and social comparisons were obtained and correlated with each loneliness measure as well.

The predictive and explanatory powers of each scale was tested in two specific areas of inquiry, and their relative strengths assessed. In the process, valuable information was gained about how foreign students compare to non-foreign students in their responses on measures of loneliness, and about the relationship between loneliness and

psychosomatic complaints.

Finally, several additional points of interest were explored. In these explorations, loneliness scores were related to: 1) demographic information, 2) academic performance, and 3) changes in social situation. In addition, sex differences in responding to the Index of Health and Stress were checked in order to test a suggested explanation of previous research findings.

CHAPTER II

METHOD

Subjects and Procedure

Subjects were 208 undergraduate students enrolled in the Introductory Psychology course at the University of Windsor, and will be described in detail in Chapter III. Questionnaires were group administered in classes ranging in size from 18 to 46 students, and were typically completed in 15-20 minutes.

Measures

The content of each measure is presented in Appendix D. Subjects received them in the form of a single questionnaire containing directions where necessary.

Personal Information: Subjects were asked about their age, sex, marital status, present living arrangement, present student status, distance from parental home, and their citizenship. Foreign students were further asked how long they had been in Canada, and whether they were involved in any social organizations.

Index of Health and Stress (Rubenstein & Shaver, 1980): Twenty common ailments are listed and subjects are asked to indicate how often during the past year they have been bothered by each. A four-point scale, from "Not at all" to "A lot", is used. This index has been altered slightly for use in the present study. Two items from the original index have been omitted: 18) "Had a disabling accident", and

19) "Suffered from a serious disease". These items were aimed at a large general population and were thought to be much less applicable to an active student population. Three new items were added by the present author, and numbered 18) "stomach aches", 19), "neck or back pains", and 20) anemia. One further question was added asking how many times subjects had seen a doctor about these ailments during the past year, as an indication of subjects' use of healthcare services.

The Revised UCLA Loneliness Scale (Russell, Peplau & Cutrona, 1980): The UCLA Loneliness Scale (ULS) consists of 20 statements about loneliness, ten worded positively and ten negatively. Subjects are asked to rate, on a four-point scale, how often each statement applies to them. Answers are summed to arrive at a loneliness score, and high scores indicate greater loneliness. The ULS has been reviewed in greater depth in the preceding chapter.

The Differential Loneliness Scale (Schmidt & Sermat, 1983): The Differential Loneliness Scale (DLS) consists of 20 statements concerning satisfaction with specific relationships. Five statements address each of four types of relationship; romantic-sexual, friendship, family, and group and community ties. Subjects are asked to respond either true or false to each statement as it applies to them. Answers are summed according to an answer key, and higher scores indicate greater dissatisfaction with relationships. Scores summed within each relationship dimension indicate the amount of satisfaction with that particular type of relationship. The DLS has been reviewed in greater detail in the preceding chapter.

Social Self-ratings: In contrast with the indirect measures of loneliness presented in the two scales above, subjects were also asked directly about their satisfaction with their relationships and about their feelings of loneliness. Subjects were asked to rate, on a 7-point scale, how satisfied people they know seem to be, how satisfied they themselves were last year, and how satisfied they are at present with their social situations. Dissatisfaction with specific types of relationships was assessed by asking subjects to rate how much change (improvement) they would like to see in their relationships in each of the relational dimensions represented in the DLS. For self-rated loneliness, subjects were simply asked to rate how lonely they felt at present. One final question asked whether the subject's social situation had changed recently, and if it had, whether the subject perceived the change to be for the better or for the worse.

CHAPTER III

RESULTS

The results of this study are presented in four parts. In Part A, the participants in the study are described. Part B presents a description and comparison of the loneliness measures. In B.1, summary data for each of the measures are reported. B.2 details comparisons among the two loneliness scales and other loneliness indicators. B.3 describes responses to the various self-ratings which were employed as loneliness indicators.

Throughout Part B, frequent reference is made to the four dimensions of relationship upon which the Differential Loneliness Scale (DLS) is based. They are denoted as: 1) romantic/sexual relationships, R/S; 2) friendships, Fr; 3) family relationships, Fam; 4) group and community ties, Com. The four DLS subscales corresponding to these dimensions are denoted as DLS-R/S, DLS-Fr, DLS-Fam and DLS-Com, respectively. The four 7-point dimensional self-rating scales corresponding to these dimensions are denoted as srR/S, srFr, srFam, and srCom, respectively.

Part C is a report on the application of the two loneliness scales in two areas of exploration. In C.1, Index of Health and Stress (IHS) scores, reflecting psychosomatic complaints, are related to loneliness scores. In C.2 the loneliness scale scores of foreign students are described and compared with those of native students.

Finally, in Part D, the results of the additional explorations of this study are presented. D.1 reports the relationships between various demographic variables and scores on each of the two loneliness scales. D.2 addresses the hypothesized relationship between loneliness scores and academic performance. D.3 reports the effects of recent changes in social situation on loneliness scores. D.4 reviews sex differences in the type of complaints elicited in the IHS.

Part A: Description of the Participants

A total of 212 subjects took part in this study. Four questionnaires were found to be incomplete and were omitted from the sample. The demographic and social characteristics of the remaining 208 subjects are presented in Tables 1 and 2.

As can be seen in Table 1, ninety-four percent of the sample were under the age of 24. The modal age was 19, and the mean age was 20.4. Slightly more than half of the subjects were female (56.25 %), and almost all were single (96.64 %) and full-time students (94.71 %). Over three quarters were in their first year at the university. Foreign students made up 21.63 percent of the sample. Although technically considered "foreign students", American students were not included in this group. The author considered the cultural similarity between American and Canadian students to be sufficient to justify grouping them together and expecting them to respond in a similar manner to the measures employed in this study. Therefore, for the purposes of this study Americans were considered "non-foreign", or native.

Most subjects considered themselves to be of average attractiveness (68.75 %), while 29.81 percent considered themselves to be attractive.

Table 1

General Demographic Characteristics

		Percentage of Sample (N=208)
Age (range: 17-42)	24 and under	94.23
	Over 24	5.77
Sex	Male	43.75
	Female	56.25
Marital Status	Single	96.64
	Married	1.92
	Separated/divorced	1.44
Full-time students		94.71
First year at university		78.37
Citizenship	Canadian or American	78.37
	Other	21.63
Primary Sexual Orientation	Heterosexual	88.94
	Other	11.06
Attractiveness (own judgement)	Attractive	29.81
	Average	68.75
	Unattractive	1.44

Only 1.44 percent thought of themselves as unattractive.

Most subjects described their primary sexual orientation as heterosexual (88.94 %). Very few described themselves as homosexual (1.44 %). Although 20 subjects (9.62 %) reported themselves to be bisexual, these figures must be considered suspect. Of those twenty, seventeen were found to be foreign students. It is therefore possible that the term "bisexual" was chosen by these students as a result of misinterpretation. Several foreign students inquired about the meanings of these terms during the study. It seems that "bisexual" may be interpreted as referring to "two sexes", and thus heterosexuality, especially when the meanings of the other terms (heterosexual, homosexual) are not clear. As result of both this uncertainty and the very small number of homosexual respondents, sexual orientation was not considered in further analysis.

The general characteristics of the social situations reported by subjects in this sample are seen in Table 2. Surprisingly, over half of them (56.25 %) were living with parents or relatives, and most (64.9 %) were within a short distance of their parents' homes. This likely reflects a characteristic of this particular university, where a high percentage of students are from the local area.

The second most common living arrangement for subjects in this sample was living in residence, on or near campus (20.19 %). This was followed by living with others off campus, such as sharing a house or apartment (14.9 %). Only a few students were found to be living alone, and an equally small number were living with a spouse or partner (4.33 % for each).

Table 2

General Reported Social Situation Characteristics

	Percentage of Sample (N=208)
Present living arrangement:	
With spouse or partner	4.33
With parents or relatives	56.25
Alone	4.33
With others off campus	14.90
In residence	20.19
Distance from parental home:	
Under 50 km.	64.90
50 - 500 km.	14.90
Over 500 km.	20.19
Active member of social organization	11.54
Satisfied with present social situation	72.12
Self-described as lonely	26.92
Undergone recent change in social situation	48.08
For the better	34.14
For the worse	13.94

Only 11.54 percent reported being actively involved in a social organization. Although only making up one-fifth of the sample, foreign students accounted for almost half (46 %) of those involved in social organizations. Only eight percent of the native students were so involved, compared to twenty-four percent of the foreign students.

Almost three-quarters of the sample (72.12 %) reported being generally satisfied with their social situations. Of the remainder, 12.5 percent reported neither satisfaction nor dissatisfaction, and 15.39 percent reported being generally dissatisfied. Just over one quarter of the sample (26.92 %) rated themselves on the lonely side of a seven point scale describing how lonely they felt. Satisfaction and loneliness ratings will be reviewed in greater detail in Part B of this chapter.

Almost half of the subjects (48.08 %) reported having undergone a recent change in their social situations. Of the total sample, 34.14 percent had seen a change for the better, and 13.94 percent had seen a change for the worse.

Part B: The Loneliness Measures

B.1 Summary Data

The Differential Loneliness Scale. The abbreviated version composed of the best twenty items overall (V20) was selected to represent the DLS in the present study (see Appendix E). Responses were scored in either a lonely or non-lonely direction. Therefore, scores could range from 0 to 20, with 0 indicating no lonely responses. In the present study, the internal consistency for this scale was only slightly below that of the original scale, with coefficient alpha = .84. A summary of

Table 3

Summary Data for the DLS

		Sex		
		Male	Female	Total
	N	91	117	208
Total Scale	Mean	6.09*	4.64*	5.28
	SD	4.68	3.80	4.26
	Range	0-19	0-17	0-19
Subscales				
DLS-R/S	Mean	2.44*	1.65*	2.00
	SD	1.83	1.63	1.76
	Range	0-5	0-5	0-5
DLS-Fr	Mean	1.67	1.43	1.54
	SD	1.72	1.65	1.68
	Range	0-6	0-6	0-6
DLS-Fam	Mean	0.83	0.68	0.75
	SD	1.51	1.33	1.41
	Range	0-5	0-5	0-5
DLS-Com	Mean	1.15	0.82	1.00
	SD	1.33	1.07	1.20
	Range	0-4	0-4	0-4

* Means are significantly different ($p < .01$)

Note - A higher score represents greater loneliness.

the scores obtained is presented in Table 3. For the entire sample, the total-scale mean score was 5.28. A two-way analysis of variance (Sex x Culture) showed that males made significantly more lonely responses than females, with mean scores of 6.09 and 4.64, respectively ($F(1, 206) = 6.50$, $p < .011$).

Subscale scores, also summarized in Table 3, show that the Romantic/sexual subscale (DLS-R/S) received the most lonely responses, with a mean of 2.00, followed by the Friendship subscale (DLS-Fr) and the Community subscale (DLS-Com), with means of 1.54 and 1.00, respectively. The fewest lonely responses were obtained in the Family subscale (DLS-Fam), with a mean of 0.75. A significant sex difference was again found in the DLS-R/S subscale, with males making more lonely responses than females ($F(1, 206) = 10.77$, $p < .001$).

The UCLA Loneliness Scale. The 20-item ULS offers 4-point choices for each response. Thus the possible scoring range is from 20 to 80, with 80 representing the greatest loneliness. In the present study, this scale had high internal consistency, with coefficient alpha = .92. As shown in Table 4, ULS scores had a mean of 38.72 for the entire sample. This mean conforms with the means generally obtained using the ULS (see Appendix H). Using a two-way analysis of variance, a sex difference was found ($F(1, 206) = 6.34$, $p < .05$), with males scoring significantly lonelier than females. Means were 40.79 and 37.10, respectively.

Other loneliness indicators. Several self-ratings were employed in the present study as "loneliness indicators". Their purpose was to enable a comparison to be made between direct inquiry and the indirect or covert assessment of loneliness provided by the major scales. Seven-

Table 4

Summary Data for the ULS

	Sex		
	Male	Female	Total
N	91	117	208
Mean	40.79*	37.10*	38.72
SD	11.52	10.09	10.87
Range	21-71	21-67	21-71

* Means are significantly different ($p < .05$).

Note - A higher score represents greater loneliness.

point Likert scales were used to obtain direct responses to overt inquiries about subjects' social situations as the subjects perceived them.

1) Self-rated loneliness (srL). Subjects were simply asked to rate how lonely they felt. As summarized in Table 5, the mean score for the entire sample was 4.92, with 1 representing much loneliness and 7 indicating no loneliness.

2) Self-rated social satisfaction (srSSat). Subjects were asked to rate how satisfied they were with their present social situations, how satisfied they had been with their social situations a year ago, and how satisfied others around them seemed to be. With 7 representing quite satisfied, the satisfaction of others was given a mean of 5.14. Subjects rated their own past satisfaction with a mean of 5.04, and their present satisfaction with a mean of 5.19. A sex difference was found, however, in this latter rating of present social satisfaction. Males indicated less satisfaction than females, with means of 4.84 and 5.46, respectively ($F(1, 206) = 7.71$, $p < .006$).

3) Self-ratings on dimensions of dissatisfaction. In each of four dimensions of relationship, subjects rated how much their relationships would have to change before they would be satisfied. Dissatisfaction is represented in each dimension (type of relationship) by the amount of change desired. With "1" representing much dissatisfaction and "7" representing none, the greatest dissatisfaction was reported in srR/S with a mean of 3.65. A sex difference was also seen in this dimension, with males reporting more dissatisfaction than females, means being 3.24 and 3.96 respectively ($F(1, 206) = 6.01$, $p < .015$). The least dissatisfaction was reported in srFam, with a mean of 4.74, while srFr and srCom produced mean scores of 4.37 and 4.22, respectively.

Table 5

Summary Data for Social Self-ratings.

	Male		Female		Total	
	Mean	(SD)	Mean	(SD)	Mean	(SD)
Loneliness (srL)						
	4.85	(1.81)	4.98	(1.82)	4.92	(1.82)
Social Satisfaction (srSSat)						
Own Present	4.84*	(1.81)	5.46*	(1.42)	5.19	(1.63)
Own Past	4.98	(1.82)	5.09	(1.87)	5.04	(1.84)
Other's	5.03	(1.58)	5.23	(1.42)	5.14	(1.49)
Relational Dissatisfaction						
srR/S	3.25**	(2.13)	3.96**	(2.03)	3.65	(2.10)
srFr	4.35	(1.86)	4.40	(1.87)	4.37	(1.86)
srFam	4.75	(1.98)	4.73	(1.86)	4.74	(1.91)
srCom	4.22	(1.67)	4.23	(1.86)	4.22	(1.77)

* $p < .006$.

** $p < .015$.

Note - 7-point scale means are interpreted as follows:

1 = lonely/dissatisfied; 7 = not lonely/satisfied.

Table 6

Percentage of Sample Subscribing to Each Scale-Point for Self-rated Social Satisfaction (srSSat) and Loneliness (srL)

Scale Point	Scale Point Label srSSat	Scale Point Label srL	Percentage of Sample srSSat	Percentage of Sample srL
1	Quite Dissatisfied	Quite Lonely	4.33	4.81
2			4.33	6.73
3	Somewhat Dissatisfied		6.73	15.38
4			12.50	9.62
5	Somewhat Satisfied		20.19	15.38
6			28.85	24.04
7	Quite Satisfied	Not at all Lonely	23.08	24.04

Although they obtained similar total sample mean scores, differences were found between the two general self-rating methods, srL and srSSat. Asking subjects to rate their social satisfaction yielded a sex difference, with females more satisfied, whereas asking subjects to rate how lonely they felt did not yield a sex difference. Also, as shown in Table 6, a greater number of people were willing to rate themselves mildly lonely (15.38 %) than rate themselves somewhat dissatisfied with their social situations (6.73 %).

B.2 Comparisons

In order to examine the construct validity of the two loneliness scales, the author compared them both with each other and with the other loneliness indicators. Table 7 shows the intermeasure product-moment correlations. As expected, the two scales, ULS and DLS, were highly correlated with r = .75. Randomly splitting the sample in half, the half-sample correlations between these two scales were .75 and .76 (see Appendix G for further validational data).

The two scales and social self-ratings. Both scales also correlated highly with self-rated loneliness and self-rated social satisfaction. The ULS had a slightly stronger correlation with srL (r = .66) as did the DLS with srSSat (r =.60).

When correlated with the self-ratings on dimensions of dissatisfaction, each scale related more strongly to two of them. As seen in Table 7, the ULS correlated more highly with srFr and srCom, whereas the DLS correlated more highly with srR/S and srFam. Both the ULS and the DLS were most strongly correlated with srFr, with r = .54 and .48,

Table 7

Correlations of Loneliness Scales With Other Loneliness Indicators

	Scale		DLS Subscale		
	ULS	DLS	R/S	Fr	Fam	Com
ULS	1.00	.75	.45	.71	.33	.60
DLS	.75	1.00	.68	.77	.57	.77
srL	.66	.61	.49	.52	.16	.51
srSSat	-.57	-.60	-.50	-.42	-.32	-.43
srR/S	.36	.45	.64	-.23	.09	.20
srFr	.54	.48	.28	.52	.14	.39
srFam	.34	.43	.12	.29	.53	.30
srCom	.42	.37	.21	.34	.21	.31

Note - With N = 208, $r \geq .18$ is significant at $p < .01$.
$r \geq .23$ is significant at $p < .001$.
$r \geq .26$ is significant at $p < .0001$.

respectively ($p < .0001$). The ULS had lowest correlations with both srFam and srR/S, while the lowest correlation for the DLS was with srCom.

The two scales and DLS subscales. The ULS correlated most highly with DLS-Fr ($r = .71$; see Table 7). The next highest correlation was DLS-Com ($r = .60$) followed by DLS-R/S ($r = .45$) and DLS-Fam ($r = .33$). Correlations between DLS subscale scores and DLS total scale scores were higher, but followed the same general pattern, although DLS-Com was as high as DLS-Fr (both $r = .77$). DLS-R/S was next ($r = .68$), and again DLS-Fam had the lowest correlation ($r = .57$). All correlations were significant at the .0001 level. Thus, friendship and community subscale scores were most representative of scores on both loneliness scales, while family subscale scores were least correlated.

When the ULS was compared with self-ratings of dissatisfaction in the four relational dimensions, the pattern of relationships was identical to that found between the ULS and the DLS subscales. Table 7 shows that the ULS was most highly correlated with srFr ($r = .54$) followed by srCom ($r = .42$) and srR/S ($r = .36$). The Family dimension again yielded the lowest correlation ($r = .34$, $p < .0001$). This consistency in pattern supports the construct validity of the DLS subscales.

DLS subscales and dimensional self-ratings. Each DLS subscale was correlated with self-rated dissatisfaction in the relational dimension it represented. In Table 7 it can be seen that DLS-R/S and srR/S correlate very highly ($r = .64$), suggesting that the R/S dimension is quite specific and easily evaluated and reported. However, R/S relationships are not entirely distinct from Fr relationships. DLS-R/S also correlated

moderately with srFr (r =.28, p<.0001), and srR/S with DLS/Fr (r =.23, p<.001).

Correlations between DLS-Fr and srFr were high as well (r =.52). However, DLS-Fr correlated moderately (p<.001) with self-ratings in each other dimension, and srFr correlated moderately with both DLS-Com and DLS-R/S as well.

A high correlation was also found between DLS-Fam and srFam (r =.53, p<.0001). The most distinct of the subscales, DLS-Fam correlated significantly only with one other dimensional self-rating, srCom (r =.21, p<.01). However, srFam did correlate moderately with two other subscales.

The weakest of the intradimensional relationships was found in the Community dimension. This dimension encompasses a wider and more varied group of relationships than do the others, and so lacks a general consensus as to what, specifically, is meant by "community ties". It is therefore not surprising to see lower correlations in this dimension. DLS-Com and srCom correlated at r =.31 (p<.0001). DLS-Com in fact had a higher correlation with srFr (r =.39). Also, srCom correlated more highly with DLS-Fr (r =.34). It thus appears that the Com dimension is the broadest of the relational dimensions. In rating their dissatisfaction in this dimension, subjects appeared to include friendships in their considerations. Dissatisfaction in both Fr and Fam relationships also seemed to underlie DLS-Com scores.

Factor Analyses

The author carried out factor analyses of the items within each scale in order to examine the factor structures of each scale. A specific factor structure was expected for the DLS, according to the conceptual model underlying the subscales. The author held no expectations concerning the unidimensional ULS. Both scales were factor analyzed using a Promax rotation method. Scree tests (Hashemi, 1981) were performed to determine the number of factors to be retained, using a preset error of .01.

For the 20-item ULS, three factors were retained, accounting for 55.2 percent of the total variance. The first factor alone accounted for 40.7 percent of the variance, and before rotation every item loaded on this factor (i.e., factor scores of .30 or greater; see Table 8). This supports the validity of considering the ULS to be a unidimensional measure.

After rotation, the first and third factors were predominantly composed of the positively keyed items on the scale. The second factor was formed entirely from the negatively keyed items (see Table 9). Table 10 shows that Factor 1 correlated most highly with Factor 2 (r =.54) while Factor 3 correlated almost equally with both Factors 1 and 2 (r =.37 and .38, respectively).

The very similar content of the items makes interpretation of these factors difficult. It does appear, however, that positively and negatively keyed items may not be as homogeneous as intended. Half of the items were changed from negative to positive statements when the ULS was revised. When scored in reverse, the new positively keyed items were presumed to be equivalent to the originals. From the present analysis it appears, however,

Table 8

Unrotated Factor Loadings for ULS Items

Item	Factor 1	Factor 2	Factor 3
1	0.61	-0.01	0.49
2	0.72	0.18	-0.01
3	0.69	-0.23	-0.22
4	0.33	-0.13	0.37
5	0.59	-0.01	0.38
6	0.67	0.05	0.33
7	0.62	0.06	-0.36
8	0.49	0.36	-0.19
9	0.41	0.03	0.49
10	0.74	-0.22	-0.08
11	0.64	0.48	0.18
12	0.54	0.16	-0.28
13	0.63	0.05	-0.39
14	0.72	0.43	-0.09
15	0.61	-0.21	0.07
16	0.70	-0.34	-0.14
17	0.67	0.14	0.08
18	0.67	0.35	-0.12
19	0.75	-0.47	-0.03
20	0.76	-0.47	-0.11

Table 9

Promax Rotated Factor Loadings for the ULS Items

Item	Factor 1	Factor 2	Factor 3
1	0.13	0.03	0.74
2	0.16	0.54	0.08
3	0.65	0.20	-0.15
4	0.08	-0.09	0.09
5	0.13	0.09	0.45
6	0.16	0.19	0.59
7	0.35	0.54	-0.38
8	-0.03	0.68	0.00
9	-0.01	-0.02	0.70
10	0.62	0.15	0.07
11	-0.26	0.74	0.28
12	0.26	0.51	0.09
13	0.44	0.50	-0.16
14	-0.04	0.82	0.12
15	0.49	0.02	0.22
16	0.77	0.02	0.09
17	0.15	0.43	0.24
18	0.03	0.73	0.09
19	0.88	-0.15	0.18
20	0.92	-0.11	0.10

Table 10

Interfactor Correlations for ULS Factors

Factor	Factor 1	Factor 2	Factor 3
1	1.00	0.54	0.37
2	0.54	1.00	0.38
3	0.37	0.38	1.00

that they are not. The factor structure of this scale shows a distinction between the positively and negatively keyed items.

For the 20-item DLS, five factors were retained, accounting for 62.1 percent of the total variance (see Tables 11 and 12 for unrotated and rotated factor loadings). The first factor acounted for 26.0 percent of the variance, and was composed primarily of DLS-Com items, although two DLS-Fr items were also included. Factor 2 was entirely DLS-Fam items and Factor 3 was DLS-R/S items. The fourth factor consisted primarily of DLS-R/S items as well, except that DLS-Fr items also contributed. Factor 5 represented DLS-Fr. As seen in Table 13, interfactor correlations were generally quite low, with the highest being found between Factors 1 and 4 (r =.33).

Thus the factor structure obtained in this analysis approximated the conceptual structure of the relational dimensions. Three of the dimensions, Fam, R/S, and Fr, were quite distinct. The Com dimension, however, blended with Fr, and a fifth dimension appeared, representing a blend of the R/S and Fr dimensions.

It is most interesting that this factor structure parallels the correlations obtained between the DLS subscales and the dimensional self-ratings. Just as the factor representing DLS-Com contained items from DLS-Fr, DLS-Com did not correlate exclusively with the Com dimension, but also with the Fr dimension. Just as DLS-Fr items appeared in a second DLS-R/S factor, DLS-R/S correlated moderately with the Fr dimension as well as to the R/S dimension. From the consistency of these findings it can be concluded that while the relational dimensions provide coherent and useful distinctions, they are not independent of each other. Some characteristics

Table 11

Unrotated Factor Loadings for DLS Items

Item	Subscale	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	Fam	0.56	-0.63	0.15	0.09	0.15
2	Com	0.59	0.21	-0.14	-0.28	-0.36
3	Fr	0.49	0.22	-0.26	0.28	0.22
4	Fam	0.46	-0.49	0.07	-0.19	-0.27
5	Fr	0.45	0.28	-0.14	0.25	-0.14
6	R/S	0.57	0.29	0.39	-0.04	-0.13
7	R/S	0.24	0.40	0.73	0.35	-0.01
8	Fr	0.57	0.17	-0.23	-0.17	0.16
9	Fam	0.48	-0.65	0.17	0.10	-0.08
10	Fr	0.51	0.17	-0.26	-0.02	0.43
11	R/S	0.45	0.26	0.41	-0.49	0.13
12	Com	0.59	0.24	-0.36	0.17	-0.21
13	Fam	0.61	-0.51	0.07	0.02	0.19
14	R/S	0.54	0.21	0.20	-0.51	0.34
15	Com	0.61	0.09	-0.01	-0.16	-0.37
16	Fr	0.50	0.13	-0.36	0.12	-0.12
17	R/S	0.30	0.38	0.70	0.36	-0.01
18	Fr	0.53	0.17	-0.32	0.28	0.34
19	Com	0.56	0.01	-0.22	0.09	-0.25
20	Fam	0.38	-0.76	0.19	0.15	0.05

Table 12

Promax Rotated Factor Loadings for DLS Items

Item	Subscale	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	Fam	-0.07	0.86	0.03	0.04	0.13
2	Com	0.71	-0.08	-0.08	0.25	-0.05
3	Fr	0.13	0.00	0.10	-0.04	0.64
4	Fam	0.36	0.57	-0.14	0.09	-0.26
5	Fr	0.43	-0.08	0.21	-0.15	0.31
6	R/S	0.32	0.04	0.48	0.29	-0.02
7	R/S	-0.05	-0.01	0.93	0.04	-0.01
8	Fr	0.22	-0.01	-0.13	0.35	0.40
9	Fam	0.10	0.83	0.05	-0.09	-0.07
10	Fr	-0.05	0.01	-0.10	0.31	0.65
11	R/S	0.03	-0.04	0.18	0.78	-0.09
12	Com	0.62	-0.07	0.01	-0.14	0.37
13	Fam	-0.04	0.74	-0.02	0.14	0.22
14	R/S	-0.07	0.01	-0.01	0.85	0.17
15	Com	0.65	0.08	0.05	0.15	-0.08
16	Fr	0.48	-0.00	-0.07	-0.10	0.35
17	R/S	-0.02	0.02	0.92	0.03	0.02
18	Fr	0.04	0.05	0.03	-0.01	0.75
19	Com	0.56	0.14	-0.01	-0.10	0.17
20	Fam	-0.10	0.92	0.03	-0.11	-0.02

Table 13

Interfactor Correlations for DLS Factors

Factor	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1	1.000	0.229	0.131	0.328	0.323
2	0.229	1.000	0.004	0.187	0.118
3	0.131	0.004	1.000	0.214	0.061
4	0.328	0.187	0.214	1.000	0.157
5	0.323	0.118	0.061	0.157	1.000

of friendship, for example, may be found in community ties or in romantic relationships.

In summary, the results of factor analyses confirmed both the unidimensional nature of the ULS and the multidimensional nature of the DLS. ULS items were grouped primarily by whether they were presented as positive or negative statements. DLS items were primarily grouped according to the subscale dimensions.

Positive vs. Negative Statements in the ULS

Factor analysis of the ULS revealed that the rotated factor structure of this scale suggested a distinction between the positively and negatively worded items. On the basis of these results, the scale was subdivided into two parts in order to further test this difference. The first part contained the ten positively-phrased items (e.g., "There are people I feel close to."). The second part contained the ten negatively-phrased items (e.g., "I am no longer close to anyone.").

A comparison of these parts confirmed that they were not equivalent. Mean scores were higher for the negatively-phrased items, indicating that they elicited lonelier responses. The mean scores for men were 17.87 for the positive and 22.92 for the negative items. For women, the mean scores were 16.73 and 20.38 for positive and negative items, respectively. Although men scored higher than women on both scales, this difference was only significant for the negative items, with F (1, 206) = 8.16, $p < .005$.

From this analysis it was seen that on the ULS, respondents tended to endorse negatively-phrased items more extremely in the lonely direction than positively-phrased items. This tendency was particularly strong in

men.

It thus appears that negative statements elicit reports of loneliness more powerfully than positive statements. It may be easier for a lonely person to agree with a negative statement than to disagree with a positive statement. This is a subtle indication that the effects of acquiescence and social desirability on loneliness responses may not have been overcome as effectively as believed in the revision of the ULS.

B.3 The Self-ratings as Loneliness Indicators

Self-ratings of dissatisfaction in dimensions. Subjects were asked to rate, on 7-point scales, their degree of dissatisfaction in each of four relational dimensions. Each of these ratings was compared with other indications of loneliness, as was the sum of the four.

As can be seen in Table 14, dissatisfaction with friendships (srFr) correlated most highly with both the DLS and the ULS (r =.48 and .54, respectively). However, it was dissatisfaction with romantic relationships (srR/S) which correlated most highly with both srL (r =.50) and srSSat (r =.40, $p < .0001$).

Self-rated R/S had the least in common (r =.62) with overall dissatisfaction, as indicated by the sum of the four self-ratings on dimensions, while srFr had the most (r =.76). Thus the R/S dimension appears to be both more distinct from the others and more prominent in the subjective, reportable experience of loneliness.

Social comparisons and past experience. Subjects were asked to rate how satisfied they were with their social situations of one year ago, and to rate how satisfied those around them (the people they see the most)

Table 14

Correlations Between Dissatisfaction Ratings in Four Relational Dimensions and Other Loneliness Measures.

Loneliness Measure	Dimensional Self-rating			
	srR/S	srFr	srFam	srCom
ULS	.36	.54	.34	.42
DLS	.45	.48	.43	.37
srL	.50	.44	.25	.34
srSSat	.40	.27	.23	.22
Sum[a]	.62	.76	.70	.74

[a] sum of the four dimensional self-ratings.

seemed presently to be.

As described previously, on the average, males rated themselves less satisfied with their social situations than did females. However, mean ratings of their past satisfaction and their perception of others' satisfaction were not different from those of women. Mean ratings for past satisfaction were 3.02 for men and 2.91 for women, and mean ratings for others' satisfaction were 2.97 and 2.77, respectively (where 1 = satisfied and 7 = dissatisfied).

The ratings of others' and past satisfaction reported above were obtained in order to examine the effects of social comparison and past experience on loneliness scores. Subjects' comparisons between their own past and present satisfaction (past comparison) and between their own and others' satisfaction (social comparison) were predicted to be influential in determining relational dissatisfaction and thus loneliness scores.

Social comparison scores were obtained by determining present satisfaction relative to the perceived satisfaction of others. The equation used to obtain these scores was as follows:

$$x = a-b-b+c, \text{ or } x = a - 2b + c$$

where "x" is the social comparison score, "a" is the rating of others' satisfaction, "b" is own satisfaction, and "a-b" is the discrepancy between others' and own satisfaction. Own satisfaction is again subtracted to make this discrepancy (a-b) vary relative to the own satisfaction rating, and "c" is a constant (14) used to transform scores into positive integers.

Past comparison scores were obtained in the same manner, calculating present satisfaction relative to past satisfaction. Both types of comparison scores ranged from 1 (much less satisfied) to 19 (much more satisfied).

So, for example, someone with a social comparison score of "19" was much more satisfied than others were perceived to be. Someone with a past comparison score of "1" was much less satisfied at present than a year ago. In order to determine how predictive these scores were of loneliness scores, the highest and lowest 37 percent of the comparison scores were contrasted.

Many more subjects rated themselves more satisfied relative to those around them (N = 74) than rated themselves less satisfied (N = 24). Likewise, a greater number reported being more satisfied presently relative to the past (N = 81) than reported being less satisfied (N = 28).

The results of a one-way analysis of variance indicated clear differences in loneliness scores between those who were more satisfied than others were perceived to be and those who were less satisfied. As seen in Table 15, mean scores on the ULS were 50.96 for those less satisfied than others and 34.99 for those more satisfied than others. This difference is significant, with F (1, 96) = 53.91, $p < .0001$. On the DLS, the less satisfied group had a mean score of 10.21 compared to 3.54 for the more satisfied group. Here, F (1, 96) = 57.11, $p < .0001$.

Results were similar with one-way analyses of variance for past comparison scores. On the ULS, those who were less satisfied now than a year ago scored a group mean of 49.32, while those who were presently more satisfied than a year ago had a significantly lower group mean of 36.21, with F (1, 107) = 33.78, $p < .0001$. The DLS mean for the less satisfied group was 9.82 and for the more satisfied group, 4.00. This difference was significant, with F (1, 107) = 45.50, $p < .0001$. Thus, both social and past comparisons were found to be predictive of loneliness scores.

Table 15

Mean Loneliness Scores for Groups in Which Subjects Were More or Less Satisfied than Others (Social Comparison) or than They Had Been in the Past (Past Comparison).

	Group	
	More Satisfied	Less Satisfied
Social Comparison	N=74	N=24
ULS	34.59	50.95
DLS	3.54	10.21
Past Comparison	N=81	N=28
ULS	36.21	49.32
DLS	4.00	9.82

Part C: Application of the Loneliness Scales

C.1 Index of Health and Stress (IHS)

The IHS was a 20 item measure of psychosomatic and emotional complaint, with a possible scoring range of 20 to 80. A low score represents few complaints, while a high score indicates many nagging complaints. Two 8-item subscales were extracted from the IHS. One contained items clearly reflecting somatic complaints (ISOM). The other contained items reflecting primarily emotional complaints (IEMO). Each of these subscales had a possible range of 8 to 32, with higher scores indicating more complaints.

Summary data for the IHS and its two subscales are presented in Table 16. Sex differences were found for all three measures, with females presenting more complaints than males. The IHS yielded means of 31.69 and 36.06 for males and females respectively, $F(1, 206) = 16.89$, $p < .0001$. The range of scores obtained was also slightly greater for females.

Mean scores for the ISOM were 11.90 and 13.48 for males and females, respectively, $F(1, 206) = 14.50$, $p < .001$. For the IEMO, mean scores were slightly higher, at 12.94 and 14.75 for males and females respectively, $F(1, 206) = 10.42$, $p < .001$.

The IHS and loneliness measures. The relationship between IHS scores and loneliness scores was explored in the present study, and correlations are presented in Table 17. The most striking aspect of this table concerns ISOM scores. Few were significantly correlated with any of the loneliness measures, and only one correlation reached the .001 level; ISOM scores for females were correlated with srl, $r = .31$, $p < .001$.

Table 16

Summary Data for the IHS by Sex

		Male	Female	Total
	N	91	117	208
IHS	Mean	31.69*	36.06*	34.15
	SD	7.03	7.96	7.86
	Range	21-56	23-63	21-63
ISOM	Mean	11.90*	13.48*	12.79
	SD	2.56	3.25	3.06
	Range	8-19	8-26	8-26
IEMO	Mean	12.94*	14.75*	13.96
	SD	3.63	4.27	4.09
	Range	8-25	8-29	8-29

* Means of sex differences are significantly different at $p < .001$.

Table 17

Correlations by Sex Between IHS and Loneliness Measures

Loneliness Measure	IHS		ISOM		IEMO	
	M	F	M	F	M	F
ULS	.49***	.49***	.30*	.27*	.52***	.55***
DLS	.49***	.40***	.29*	.19	.52***	.46***
DLS-R/S	.37**	.15	.20	.04	.37**	.16
DLS-Fr	.34*	.32**	.18	.19	.38**	.39***
DLS-Fam	.36**	.26	.27*	.13	.37**	.30**
DLS-Com	.36**	.37***	.23	.16	.38**	.42***
srL	.43***	.46***	.29*	.31**	.45***	.47***
srSSat	.35**	.45***	.19	.28*	.36***	.40***

*** $p < .0001$

** $p < .001$

* $p < .01$

IHS scores were highly correlated with scores on both loneliness scales, as were IEMO scores. For males, IHS scores correlated equally with scores on each loneliness scale, $r = .49$, as did IEMO scores, $r = .52$ ($p < .0001$). For females, however, both IHS and IEMO scores correlated more highly with the ULS; $r = .49$ and .55 respectively, compared to .40 and .46 with the DLS ($p < .0001$). Thus, while the somatic complaint subscale (ISOM) was not significantly correlated with either loneliness scale, both the emotional complaint subscale (IEMO) and the total IHS score were highly correlated with loneliness scale scores.

DLS subscale scores were compared with IHS scores in order to determine how dissatisfaction in each relational dimension related to psychosomatic and emotional complaints. DLS-R/S and DLS-Fam scores were correlated with IHS scores only for males; $r = .37$ and .36 respectively, $p < .001$. DLS-Com and DLS-Fr scores correlated with IHS scores for both sexes.

Emotional complaint scores, as with IHS scores, correlated significantly with romantic/sexual subscale scores only for males, $r = .37$ ($p < .001$). For the other subscales, correlations were significant for both sexes. Female IEMO scores were more highly correlated with both DLS-Fr and DLS-Com scores; $r = .39$ and .42 respectively, $p < .001$. DLS-Fam correlations were significant at the .001 level for both sexes.

Thus correlations with DLS subscales were generally higher with the emotional complaint subscale than with the total IHS. These latter correlations were lowered by the non-significant correlations between the somatic complaint and DLS subscales.

IHS scores were also correlated with both srL and srSSat.

Correlations between srL scores and both IHS and IEMO scores were significant at the .0001 level, and similar for both sexes. The only loneliness scores to correlate with ISOM scores were female srL scores, $r = .31$, $p < .001$. Correlations between srSSat and both IHS and IEMO scores were significant for males with $r = .35$ and .36 respectively, ($p < .001$) and for females with $r = .45$ and .40 respectively ($p < .0001$).

The IHS and social situations. IHS scores were checked against subjects in different social situations in order to determine if particular situations could be found to be more likely accompanied by psychosomatic or emotional complaints.

Living arrangement was found to have a significant effect on IHS scores, $F(4, 203) = 2.38$, $p < .05$. As seen in Table 18, those living with a spouse or partner had the fewest complaints, ($M = 30.55$), followed by those living in residence ($M = 31.76$). By far the greatest number of complaints were reported by those living alone ($M = 38.00$).

A recent change in social situation was also found to have a significant effect on IHS scores (see Table 19). Those who reported no recent change obtained a mean score of 32.39. For those who reported that their social situations had recently changed for the better, the mean IHS score was 35.01. The greatest number of complaints, with a mean of 38.59, came from those who reported having undergone a change for the worse in their social situations. A one-way analysis of variance showed that this difference was significant, $F(1, 206) = 8.31$, $p < .001$).

Health care utilization. One additional health-related item was included in this study, though not included in the IHS analysis. As an

Table 18

IHS Scores and Living Arrangement

Living Arrangement	N	IHS Mean Scores
With spouse or partner	9	30.55
With parents or relatives	117	34.99
Alone	9	38.00
With others off campus	31	34.13
In residence	42	31.76

Table 19

IHS Scores and Change in Social Situation

	N	IHS Mean Score
No Recent Change	108	32.39
Change for the Better	71	35.01
Change for the Worse	29	38.59

indication of health-care service utilization, subjects were asked how frequently they had seen a doctor or helping professional in the last year. Scores could range from 1 to 4 with a higher score indicating greater health-care service utilization. This score was found to be unrelated to any measure of loneliness.

C.2 Foreign vs. Native Students

In the present study, the responses of foreign students to different measures of loneliness were explored. These responses were compared with those of native students, as a method of scale-validation using known groups.

The author has used the term "culture" loosely in order to refer more easily to the "foreign vs. native" distinction. As used in this report, it does not refer to actual cultures, but rather designates either North-American or non-North American subjects.

Of the 208 subjects taking part in this study, 45 were foreign students. All 21 males and 24 females were single, but none lived alone. Just over half lived with others off campus (i.e., sharing a house). While 26.67% of the foreign students were new arrivals in Canada (six months or less), 44.44% had lived in Canada for at least two years.

The loneliness measures. Two-way (Sex x Culture) analysis of variance indicated that foreign students did respond differently than native students to the two loneliness scales and to several of the self-rating scales. In all cases of difference, foreign student scores indicated greater loneliness. As seen in Table 20, they recorded higher mean scores on the ULS (43.60 vs. 37.37, $F(1, 206) = 11.94$, $p < .0007$)

Table 20

Mean Scores for Foreign vs. Native Students

	Foreign	Native
N	45	136
Scale scores		
ULS	43.60***	37.37***
DLS	7.20***	4.75***
DLS-R/S	2.35	1.89
DLS-Fr	2.13**	1.37**
DLS-Fam	1.09	0.66
DLS-Com	1.62****	0.82****
Self-ratings		
srL	4.38*	5.07*
srSSat	5.22	5.18
srR/S	3.35	3.74
srFr	3.40****	4.65****
srFam	4.18*	4.89*
srCom	3.75*	4.35*

Note: For Scale scores, higher means show greater loneliness.

For Self-ratings, lower means show greater loneliness.

Significant mean differences: * $p<.05$

** $p<.01$

*** $p<.001$

**** $p<.0001$

and on the DLS (7.20 vs. 4.75, $F(1, 206) = 12.11$, $p < .0006$). Two DLS subscales also yielded this difference. DLS-Com showed the greatest difference, with a foreign students' mean of 1.62 compared to 0.82 for native students ($F(1, 206) = 15.40$, $p < .0001$). DLS-Fr showed a lesser difference with means of 2.13 and 1.37 for foreign and native students respectively ($F(1, 206) = 7.18$, $p < .008$). For further analysis of the DLS subscales with regard to their abilities to differentiate between foreign and native students, see Appendix F.

For srL, foreign students also tended to report greater loneliness than native students. No difference was found, however, with srSSat. Foreign students also reported greater dissatisfaction in three of the four relational dimensions, srFr, srFam, and srCom (see Table 20). Only srR/S showed no difference.

Sex differences in response to the two loneliness scales were reported earlier. Since foreign student scores were also found to differ from those of native students, responses to each of the two scales were examined using a 2 x 2 (Culture x Sex) analysis of variance. Results are described in Table 21.

As can be seen, the same pattern was found with both loneliness scales. Foreign students scored higher, indicating greater loneliness than native students, and males scored higher than females. (Mean scores are presented in Table 22). Foreign males had the highest scores on both scales, followed by foreign females. Next were non-foreign males, with non-foreign females obtaining the lowest (least lonely) scores. The cultural difference is therefore dominant, with sex differences being found within each cultural group.

Table 21

Culture by Sex Analysis of Variance For Loneliness Scores

Scale	Source	df	SS	F Value	Prob > F
ULS	Culture	1	1311.12	11.94	0.0007
	Sex	1	696.46	6.34	0.0126
	Interaction	1	46.47	0.42	0.5162
DLS	Culture	1	202.85	12.11	0.0006
	Sex	1	108.79	6.50	0.0115
	Interaction	1	29.86	1.78	0.1833

Note: N = 208

Table 22

Mean Scores by Sex of Foreign vs. Native Students

Scale		Male	Female
ULS	Foreign	44.52	42.79
	Native	39.67	35.63
DLS	Foreign	8.71	5.87
	Native	5.31	4.32

To examine this cultural difference in more detail, the correlational analysis of loneliness measures reported in Table 7 was repeated for each cultural group. These results are presented in Table 23.

For native subjects the two scales correlated at r =.73. The ULS correlated slightly more with srL (r =.67) than with srSSat (r =.59). The DLS correlated almost equally with both (r =.64 and .65). The only minor difference between the two scales was a slightly higher correlation for the DLS with srSSat, but all correlations were significant at the .0001 level.

For foreign subjects, the relationships between the two scales and the self-ratings were quite different. The ULS correlated with both self-ratings almost equally; for srL, r =.58 and for srSSat, r =.56 (p <.0001). The DLS, however, showed lower correlations with both; for srL, r =.44 (p <.01), and for srSSat, r =.53 (p <.001).

In order to examine the difference between groups in the correlations of scales to self-ratings, the first step was to examine the interrelationships between the two loneliness scales and the DLS subscales. Quite similar patterns were found for both foreign and native subjects. For both groups, the DLS correlated more highly than the ULS with all of its subscales. Native student scores showed DLS-Fr and DLS-Com correlating most highly with both scales. The same was the case with foreign subjects, except that DLS-R/S correlated slightly more with DLS than did DLS-Com. As well, in both groups, DLS-Fam showed the smallest correlation with both scales, expecially the ULS. Thus, within these two loneliness scales, foreign students seem to have responded in a pattern fairly similar to that of native students, although generally indicating

Table 23

Intermeasure Correlations for Foreign and Native Students

	Foreign (N = 45)				Native (N = 163)			
	ULS	DLS	srL	srSSat	ULS	DLS	srL	srSSat
ULS	-	.78	.58	.56	-	.73	.67	.59
DLS	.78	-	.44	.53	.73	-	.64	.65
srL	.58	.44	-	.26	.67	.64	-	.67
srSSat	.56	.53	.26	-	.59	.65	.67	-
srR/S	.34	.31	.42	.02	.36	.48	.52	.51
srFr	.32	.38	.30	.01	.55	.47	.45	.35
srFam	.38	.36	.06	.28	.29	.43	.28	.23
srCom	.30	.18	.08	.10	.43	.41	.39	.26
DLS-R/S	.54	.71	.47	.42	.41	.67	.48	.52
DLS-Fr	.70	.78	.41	.28	.70	.75	.53	.48
DLS-Fam	.37	.63	.00	.45	.29	.54	.18	.29
DLS-Com	.56	.67	.19	.44	.55	.78	.52	.46

Note - For Foreign students (N=45):
- if $r \geq .37$, $p < .01$;
- if $r \geq .47$, $p < .001$;
- if $r \geq .54$, $p < .0001$.

For Native students (N=163):
- if $r \geq .20$, $p < .01$;
- if $r \geq .25$, $p < .001$;
- if $r \geq .29$, $p < .0001$.

greater loneliness (Table 20).

The second step in trying to explain this between-groups difference was to examine the self-ratings themselves. In the group of native students, srL correlated highly with srSSat, r =.67. For foreign students, however, there was no significant correlation between the two, r =.26 (not significant).

Conceptually, a high correlation, such as was found in the native group, is expected between these two self-ratings. This was not found, making the interpretation of the foreign student self-ratings uncertain. The validity of these self-ratings was therefore examined further by examining their correlations with the dimensional self-ratings.

Native subjects' self-ratings of dissatisfaction in every dimension correlated with scores on both loneliness scales. For the ULS, the highest correlation was with srFr, followed by srCom. The DLS correlated most highly with srR/S and srFr, while srFam and srCom were close behind. For both srL and srSSat the highest correlation was with srR/S, r =.52 and .51, respectively ($p < .0001$). Second in both was srFr, and srFam was the weakest correlation in both cases. Thus for native students, srR/S and srFr indicate the most influential dimensions in srL, srSSat and DLS scores. ULS scores appear to be influenced more by the friendship and community dimensions and less by the romantic/sexual dimension.

Foreign students' self-ratings of dissatisfaction did not correlate highly with any measures. The only dimensional self-rating to correlate with the ULS was srFam. Yet, for the same subjects, DLS-Fam was the DLS subscale showing the lowest correlation with ULS scores, as did srFam for non-foreign subjects. The DLS correlated slightly with srFr, while

srL correlated with srR/S. No other correlations were significant. In fact, srSSat did not correlate with any of the dimensional self-ratings of dissatisfaction. These findings indicate that foreign students respond to self-rating questions quite differently than native students. Their responses do not match conceptual expectations, and therefore pose an interesting challenge in trying to interpret them. More research is required in order to meet this challenge.

These findings do, however, have important implications for future research on loneliness in foreign students. It appears that, with foreign students, self-ratings of loneliness or relational dissatisfaction may not be adequate criteria by which to evaluate multi-item loneliness scales.

Part D: Additional Explorations

D.1 Demographic Variables and Loneliness Scores

Several demographic variables considered relevant to loneliness were examined in the present study. These were marital status, living arrangement, distance from parental home, length of time in Canada (for foreign students), and membership in social organizations.

A valid assessment of the relationship between marital status and loneliness scale scores was not possible in this study, since almost 97 percent of subjects were single. However, no relationships were found between scores of either loneliness scale and living arrangement, distance from parental home, length of time in Canada, or membership in social organizations.

Living arrangement results may have been weakened by the influence of other variables. For example, greater loneliness was reported, as expected, by those living alone, but also by those living with others off campus. This latter finding may be accounted for the fact that foreign students, who generally reported greater loneliness, comprised about 75 percent of those in this living situation.

Loneliness and own attractiveness ratings. Subjects' ratings of their own attractiveness weresignificantly related to loneliness scores. Those who considered themselves to be attractive obtained lower mean loneliness scores on all measures than those who considered themselves "average". Significantly higher loneliness scores were recorded for the few who considered themselves unattractive. Despite a low N for the

"unattractive" group, a one-way analysis of variance showed these differences to be significant in the ULS, DLS, srL and srSSat (see Table 24). Further exploration into the relationship between attractiveness and loneliness was deemed beyond the scope of this study. However, the consistency of this finding across all measures makes it noteworthy.

D.2 Academic Performance and Loneliness Scores

In order to determine whether there was any relationship between academic performance and loneliness scores, subjects were asked to report their present, past (last year) and expected future average grades. Past grades were requested in order to determine whether subjects' grades had increased or decreased during the past year.

When present grades were compared with loneliness scores, no relationship was found (r =.02 for both the ULS and srL, and .03 for both the DLS and srSSat). Past or expected future grades did not correlate significantly with loneliness scores, nor did an increase or decrease in grades either over the past year or expected in the future (r ranging from .01 to .10, all non-significant). Thus, no relationship was found between loneliness scores and academic acheivement, even though several different measures of loneliness were used.

D.3 Changing Social Situation

Subjects were asked whether they had undergone any recent change in their social situations, and if so, whether that change had been for the better or for the worse. The loneliness scores of those who had undergone a change for the better were compared with those who had undergone a change for the worse, using a one-way analysis of variance. A significant

Table 24

Mean Loneliness Scores by Attractiveness

N =	Attractive 62	Average 143	Unattractive 3	F(2,205)	p<
ULS	35.61	39.78	52.33	5.82	.003
DLS	4.39	5.58	9.33	3.14	.045
srL	2.71	3.17	6.33	6.61	.002
srSSat	2.40	2.96	4.33	3.93	.021

Note: Higher score represents greater loneliness.

difference was found in all measures of loneliness, with subjects reporting a change for the worse also reporting greater loneliness.

As can be seen in Table 25, those who had undergone a change for the better scored consistently, but not significantly, less lonely than those whose social situations had not changed recently. A clear difference can be seen, however, between those who experienced a change for the better and those whose change was for the worse. On the ULS, the mean score for the latter group was 44.90, compared to 36.31 for the "change for the better" group ($F(1, 98) = 16.53$, $p < .0001$). On the DLS, the means of the "worse" and "better" subjects were 8.45 and 4.55, respectively ($F(1, 98) = 21.29$, $p < .0001$).

On the self-ratings, for which a lower mean represents greater loneliness, the "change for the worse" subjects again reported themselves to be significantly more lonely. On srL, means were 3.14 and 5.24 for "worse" and "better" subjects, respectively ($F(1, 98) = 36.17$, $p < .0001$), and on srSSat, the means were 3.62 and 5.83 ($F(1, 98) = 56.40$, $p < .0001$).

D.4 Gender Differences in Emotional and Somatic Complaints

As reported above (see Tables 3, 4 and 5), gender differences were found in scores of both loneliness scales and in srSSat. In all cases, males reported more loneliness or less social satisfaction than females. However, no gender differences appeared in srL.

Also reported above (see Table 16), gender differences were found in IHS scores. Females indicated more complaints than males, with mean scores of 36.06 and 31.69, respectively.

The IHS was partitioned into two subscales for the present study,

Table 25

Mean Loneliness Scores for Different Changes in Social Situation.

	Change for the Worse	Change for the Better	No Change
N	29	71	108
ULS[a]	44.90*	36.31*	38.39
DLS[a]	8.45*	4.55*	4.91
srL[b]	3.14*	5.24*	5.19
srSSat[b]	3.62*	5.83*	5.19

* $p < .0001$

[a] higher mean - greater loneliness

[b] lower mean - greater loneliness

one containing somatic (ISOM) complaints, and the other, emotional (IEMO) complaints. This was done in order to determine if either sex would subscribe more frequently than the other to one type of complaint. Results showed that women scored higher in both types of complaints than men (see Table 16), with means of 13.48 and 14.75 on ISOM and IEMO, respectively, compared to 11.90 and 12.94 for men. Thus, while men generally reported more loneliness, they reported fewer psychosomatic or emotional complaints.

CHAPTER IV

DISCUSSION

The purpose of this study was to examine and compare two measures of loneliness; the unidimensional UCLA Loneliness Scale (ULS) and the multidimensional Differential Loneliness Scale (DLS). The primary goal was to investigate the construct validity of these scales. The information obtained about loneliness through the use of these scales provided the opportunity for additional explorations.

The lack of any single measure which is accepted as a definitive criterion of loneliness makes construct validity a relevant and important consideration in loneliness research. The psychometric properties of two loneliness measures, the ULS and the DLS, were investigated in the present study by correlating them with each other and with a number of other measures conceptually related to loneliness.

The results presented in Chapter III concerning the construct validity of both the ULS and the DLS will now be reviewed. The methods used to investigate these scales will also be discussed.

Construct Validation

The ULS and the DLS were found to correlate very highly with each other, indicating that they do indeed appear to be assessing the same construct. Both scales also correlated highly with self-rated loneliness and negatively with self-rated social satisfaction. These findings support their construct validity as measures of loneliness.

The four DLS subscales were each found to be significantly correlated with self-ratings of dissatisfaction in the corresponding relational dimensions. These correlations were high in the romantic/sexual, friendship and family dimensions, lending support to the construct validity of these subscales. Some characteristics of the friendship dimension appeared to be quite pervasive and extended into other relational dimensions, especially community ties and romantic/sexual relationships.

Conceptually, the relational dimension represented by the Community subscale encompasses a wider and more varied group of relationships than do the others. It was, therefore, very interesting to see this reflected in the DLS subscales. Of these, only the Community subscale correlated as highly with self-ratings in other relational dimensions (friendship and family relations) as it did with self-ratings in the same dimension.

The construct validity of the Community subscale was demonstrated in the comparison between foreign and native students. As predicted, foreign students indicated significantly greater dissatisfaction with their community ties than did native students. Significant differences between these two groups were found in scores from both loneliness scales.

Results suggest that both the ULS and the DLS were valid indicators of loneliness in foreign students. These scales appeared to have even more consistency in evaluating loneliness in foreign students than did direct self-ratings.

Several findings demonstrated the validity of these two scales for this population. First, the correlation between the ULS and the DLS was higher among these students then among native subjects, and indicated a

high degree of agreement between the two scales. Second, although loneliness scores were generally higher for foreign students, the same sex difference was found as with native students (i.e., males more lonely than females). Third, very similar patterns were found for both foreign and native students in the correlations between the two loneliness scales and the DLS subscales. For foreign students, all DLS subscales were more highly correlated with the DLS than the ULS, and the order of magnitude of subscale correlations was similar to those for native students. Finally, as mentioned above, of all the DLS subscales, the one showing the greatest difference between foreign and native students was the community ties subscale, on which foreign students scored significantly greater dissatisfaction. This predicted result further supports the validity of the DLS. More importantly, however, it demonstrates a practical advantage of this scale in its ability to identify a specific relational deficit as representative of a particular population.

The construct validity of the two loneliness scales gained additional support in the findings concerning past experience and social comparison processes. On the basis of the conceptual model which stated that comparisons with past experience or with other's apparent social satisfaction were influential in determining relational dissatisfaction, it was hypothesized that each of these two factors would influence loneliness scores.

The present results confirmed these hypotheses. Those who saw themselves as being more satisfied than those around them were less lonely than those who thought they were less satisfied (more deficient) than everyone else (i.e. their subjective norm). Likewise, those who were

presently more satisfied than they remembered being in the past were less lonely than those whose past experience was of greater satisfaction and thus had higher expectations.

The conceptual model of loneliness presented in Chapter 1 described the cognitive component of loneliness as involving the recognition of a discrepancy between desired and achieved relations. If achieved relations are less than desired relations, the model stated, then a relational deficit if perceived. In the terms of this model, both social and past comparisons influence the level of desired and achieved relationships. Social comparison processes can increase desired relations by suggesting social norms of greater satisfaction, raising personal expectations, and increasing feelings of relational deficiency. Past experience of greater satisfaction indicates presently reduced achieved relations and increased desired relations due to higher accustomed satisfaction.

Thus, the cognitive component of the conceptual model of loneliness presented earlier is supported by these results. Those reporting achieved relations which appear to match their desired relations (i.e., presently as satisfied as others or as in the past) indicated less loneliness, while those reporting greater desired than achieved relations indicated greater loneliness.

Finally, on the basis of the conceptualized relationship between loneliness and stress-related symptoms, it was hypothesized that there would be a relationship between loneliness scores and Index of Health and Stress scores. This correlation was demonstrated by both the ULS and the DLS, further supporting the construct validity of these measures of loneliness.

In summary, the construct validity of both loneliness scales was supported by findings in a variety of investigations. Both scales correlated highly with each other and with self-ratings of loneliness and social satisfaction. Predicted relationships between loneliness and social comparisons, past experience, culture and stress-related symptoms were also demonstrated by both loneliness scales.

Comparison of the Two Loneliness Scales

The ULS and the DLS Subscales

The four DLS subscales were each compared with the ULS in order to determine what types of relationships were represented by the ULS in its assessment of general loneliness. This comparison was also made to determine the magnitude of the correlations between each DLS subscale and independently assessed general loneliness. The ULS, as expected on the basis of earlier research (Solano, 1980), was found to correlate most highly with the friendship dimension. In fact, it correlated more highly with the Friendship subscale than with self-rated loneliness. An unexpectedly high correlation was found between the ULS and the Community subscale of the DLS. This is an important finding because, although the lack of community involvement is often discussed as being an important determinant of loneliness, the DLS is the only measure to specifically distinguish this dimension in the assessment of loneliness. Finally, the Family subscale was the least related to the ULS, indicating that family relationships may be the least influential determinants of global loneliness.

Thus, loneliness, as assessed by the ULS, appears to be primarily a perceived deficit in friendships, combined with an insecure base in the

community. Accordingly, the Friendship subscale of the DLS correlates very highly with independently assessed loneliness (ULS), while the Community, Romantic/sexual and Family subscales follow in descending order of correlation. From this finding, it is concluded that the Friendship subscale would be the most adequate of the DLS subscales for making an assessment of general loneliness on the basis of a small number of items.

In order to compare the utility of the two loneliness scales, both were applied to two specific areas of inquiry. The first was an examination of the relationship between loneliness and stress-related symptoms. The second was an assessment of loneliness in foreign students. The findings from each of these inquiries will now be summarized and discussed.

Loneliness and Stress-Related Symptoms

The ULS and the DLS were compared in terms of how they related to scores on the Index of Health and Stress (IHS), a checklist of stress-related symptoms. Scores for men on both scales correlated significantly and at the same magnitude with their IHS scores (r =.49 for both). For women, however, DLS total scores did not correlate as highly with IHS scores (r =.40, p<.0001) as did ULS scores (r =.49). From this, it appears that the DLS was sensitive to sex differences which were not detected by the ULS.

To further explore this finding, DLS subscale scores were correlated with IHS scores. Whereas all subscale scores correlated significantly with the IHS scores for men, two did not for women. The Romantic/sexual and Family subscales were both unrelated to IHS scores in

the responses of women. The Friendship and Community subscales, however, were significantly correlated with them. As can be recalled, the ULS primarily represents friendship and community relations; the two dimensions which were correlated with IHS scores. This may help to explain why ULS scores for women correlated more highly with their IHS scores than did DLS scores.

The present study indicates that women reported less dissatisfaction with romantic/sexual relationships and with relationships in general, but more emotional and somatic complaints than did men. The stress-related symptoms of women appear to be related primarily to a lack of friendship and community support, and unrelated to romantic satisfaction. The stress-related symptoms of men, on the other hand, appear to be related to dissatisfaction in all types of relationships.

Thus, while the ULS indicated only that loneliness and stress-related symptoms were related, the DLS provided a more comprehensive view. It suggested that men will tend to report more symptoms when dissatisfied in any of the relational dimensions, whereas women are just as likely to report symptoms even when satisfied with their romantic/sexual or family relations. No one relational dimension stood out as being the most highly related to symptom reporting, although friendships and a sense of community appear to be most important in minimizing stress-related symptoms, especially for women.

According to the comceptual model of loneliness presented in Chapter I, loneliness is a stressful experience. The present findings, that increases in the stress-related symptoms of men were correlated with dissatisfaction in all types of relationships, was supportive of the conceptual model.

The results for women, however, seemed to indicate a more complex relationship between stress-related symptoms and loneliness. For women, satisfaction with romantic or family relations did not correlate with fewer reported symptoms. One possible explanation for this finding is that while deficits in romantic and family relations may be stressful, involvement in these types of relationships may also be stress producing to some extent (i.e., fear of losing a romantic partner), especially for women.

Another possibility is suggested by the research into gender roles. Colwill and Lips (1978) suggested that as a result of trying to live up to our cultural concepts of masculinity and femininity, women in our society may in fact be under greater stress, in general, than men. This would account for the present finding that women scored generally higher on a measure of stress-related symptoms. In may be that dissatisfaction in each dimension of relationship (i.e., loneliness) is stressful, but that the greater general level of stress experienced by women is still appreciable even when they are satisfied with romantic or family relations.

The present findings point to the need for further research directed toward an in-depth examination of sex differences in the way both stress and loneliness are experienced. The DLS would be a useful and important instrument in such an undertaking.

The IHS and social situations. Stress-related complaints were found to be more prevalent among those who lived alone, and much less frequent, among those who lived with a spouse or partner, or in residence. This finding strongly suggests the existence of a relationship between loneliness and IHS complaints, as was indicated by both loneliness scales.

Another factor found to affect IHS scores was that of recent change in one's social situation. It appears that any change in social situation is correlated with an increase in stress-related complaints. If such a change is for the worse, implying a loss of relational satisfaction, the number and frequency of complaints is greatest. When the change is for the better, the level of complaint is lower, but still greater than when the social situation has been stable. This finding is consistent with the common finding that any significant change in living situation, whether positive or negative, can increase the level of stress in a person's life (i.e., "life change units," Holmes & Holmes, 1970).

Concluding remarks on the IHS. IHS scores were found to be correlated significantly with loneliness scores, but not as highly as expected. When IHS scores were broken down into emotional and somatic subscales, it was found that almost all of the total correlation was due to the emotional complaint items. Somatic complaints did not correlate with loneliness scores at all. The same result was found by V. Sermat (personal communication, May 1983) using the 60-item DLS and different health measures with university students in Finland. Emotional types of complaints did correlate with loneliness scores, whereas somatic complaints did not.

In addition, the present results did not support the hypothesis that lonely subjects make more frequent use of health-care services. There was no relationship between such utilization and loneliness scores.

Thus, the link between loneliness and health care problems, suggested by the results of Rubenstein and Shaver (1980), was not found in the present study. Furthermore, the present results suggest that what Rubenstein and Shaver were describing as "psychosomatic symptoms" were

actually emotional or "psychological" complaints, rather than somatic. However, the present findings do not rule out the possibility that psychosomatic symptoms can arise from prolonged emotional stress, and they do support the relationship between loneliness and emotional stress. Therefore, it is possible that a relationship may exist between somatic complaints and long-term or chronic loneliness. Somatic complaints may increase as the duration of loneliness increases. Further research is necessary before this determination can be made.

Loneliness and Foreign Students

It was stated earlier that foreign students have been identified as a "high-risk" group for loneliness, and it was predicted that their loneliness scores would therefore be higher than those of native students. This prediction was verified by the results of the present study, with foreign students scoring significantly higher on both loneliness scales. A sex difference was also found on both scales, with foreign males reporting greater loneliness than foreign females. According to the DLS subscales, foreign students tended to be less satisfied than native students with their community ties and with their friendships. It seems likely that friendships with similar others would be particularly important in helping to compensate for the lack of family and community ties.

Foreign students' self-ratings. In addition to their responses to the loneliness scales, foreign students' self-ratings of loneliness and social satisfaction were also examined. Their self-ratings did not correlate with their ULS and DLS scale scores as highly as did those of

native students.

These self-ratings revealed an even greater difference between foreign and native responses than did the scale scores. While the correlation between self-rated loneliness and self-rated social satisfaction was very high, as expected, for native students, these two self-ratings were unrelated for foreign students. Social satisfaction and loneliness were apparently not considered or interpreted to be equivalent by these students. While foreign students rated themselves slightly more lonely than non-foreign students, they were less likely to label themselves dissatisfied with their social situations. This could be the result of either a greater unwillingness to admit dissatisfaction or a tendency to be satisfied with less adequate relationships. The first possibility seems unlikely, since the same subjects were not unwilling to admit being lonely. The second possibility seems more likely: Foreign students may place a greater emphasis on non-social achievement and have lower expectations for social satisfaction, thereby being satisfied with less adequate relationships.

The self-ratings of dissatisfaction in each of the relational dimensions were also difficult to interpret for foreign students. Inconsistencies and lack of expected relationships between measures suggest that foreign students did not respond to these self-rating items in the same way that non-foreign students did. These dimensional self-rating items were more conceptually elaborate than the others, asking subjects to rate the amount of desired change, rather than dissatisfaction. It is therefore possible that these items were more open to misinterpretation or confusion in responding than the others. It must nevertheless be concluded that these self-ratings may be of questionable value as

indicators of loneliness for foreign students.

Comparison Summary

The present study examined and compared two measures of loneliness: the unidimensional ULS and the multidimensional DLS. The results generally substantiate the construct validity of both of these scales. The two scales appear to be assessing the same construct, in spite of the fact that they do so quite differently. Both scales correlated highly with self-rated loneliness and with self-rated social satisfaction.

The conceptual structure of the DLS subscales also received some support, although the relational dimensions represented by each appeared to overlap more than suggested in the conceptual model of the DLS. Aspects of each type of relationship were found to be relevant in other relational dimensions. For example, family and friends may provide substitute community ties, and family members may fulfill friendship roles.

According to the DLS subscales, students tended to be least satisfied with their romantic/sexual relationships and most satisfied with their family relationships. Both loneliness scales correlated highest with the Friendship and Community subscales.

The two loneliness scales were employed in two specific areas of inquiry. The first was exploring the relationship between loneliness and stress-related symptoms. From the ULS it was determined that loneliness was correlated with emotional but not somatic complaints. The DLS yielded the same information but also added a much broader picture of the relationship. It reflected sex differences in the relationship between complaints and loneliness which were not detected by the ULS. It

indicated, for example, that the stress-related symptoms of women were not related to their satisfaction in romantic/sexual relationships, whereas those of men were.

The second area of inquiry in which the two scales were employed was the assessment of loneliness in foreign students. The ULS showed that foreign students were more lonely than non-foreign students. Again the DLS provided the same information as well as considerable additional information. Foreign students were much less satisfied with their community and friendship relationships than were non-foreign students. Thus, both loneliness scales were equally sensitive to the difference between the reported loneliness of foreign and non-foreign students. However, the DLS provided more comprehensive information about this difference. Self-ratings were found to be less consistent indicators of loneliness in foreign students.

From the present results it can be concluded that the ULS and the DLS are both valid measures of loneliness which are equivalent in their assessment of global loneliness. The multidimensional nature of the DLS, however, gives it a decided advantage in the amount of information obtained concerning the specific relational deficits being experienced by the lonely person.

DLS vs. ULS: Conclusions

The present research replicates the finding of high internal consistency for the ULS (Russell et al., 1980), and provides an initial indication of high internal consistency for the abbreviated DLS. While the ULS appears to have slightly higher internal consistency, this

is not surprising in light of the multidimensional nature of the DLS. As for construct validity, the two scales received equivalent support, with neither demonstrating more or less validity than the other. As measures of general loneliness, they appeared to perform equally well.

The ULS has been a popular and useful research instrument because of its reliability and ease of administration. The full 60-item version of the DLS, while also being reliable and potentially more informative, was cumbersome relative to the ULS, and therefore less than ideal for research purposes. The present study has demonstrated that the abbreviated 20-item version of the DLS is comparable to the ULS in its assessment of global loneliness, its validity, and its ease of administration. The fact that it provides a much greater amount of interpretable information makes it appear to have an advantage as a research instrument. Different subject populations (i.e. different age groups or cultural groups) can be differentiated not only by degree of loneliness but also by predominant type of relational deficit. Factors known to be related to loneliness may be found to relate primarily to one type of relational deficit. Many other areas of exploration may be opened up with the new information derived from the DLS.

As well as usefulness as a research instrument, the DLS has the added advantage of having practical or clinical utility when applied to individual cases of loneliness. Compared to the ULS, it provides a much more detailed assessment of the individual's experience of loneliness. As well as determining a degree of loneliness, it obtains an indication of whether that loneliness is the result of a felt deficiency in a specific type of relationship or whether it is a general dissatisfaction

with all relationships. It can point out which relational dimension may need more clinical attention and which can be turned to for immediate support.

The ULS has already demonstrated its value as a research instrument and the present findings support its validity as a measure of loneliness. It is concluded, however, that the multidimensional DLS provides a greater amount of interpretable information, with equal validity and convenience. The DLS should make a valuable contribution to research into loneliness.

Self-ratings as Measures of Loneliness

General Self-ratings

Two different general loneliness self-rating procedures were employed in the present study in order to compare responses to different forms of direct inquiry. Various types of direct inquiry have been used as loneliness criteria in previous research. Since these different forms have only been assumed to be equivalent, it was important to determine whether or not subjects conceived of and responded to them as if they were. Therefore, self-ratings of loneliness were compared with those of social satisfaction.

Several differences in response to these direct inquiries were noteworthy. A sex difference was found only for self-rated social satisfaction, with women rating themselves more satisfied than men. Men tended to rate themselves very similarly on both scales and had almost identical mean ratings on each. Women, on the other hand, seemed less willing to rate themselves as socially dissatisfied than to rate themselves as

lonely, and had a higher mean satisfaction rating. For both sexes, people were more likely to rate themselves as being somewhat lonely than they were to rate themselves as being somewhat dissatisfied with their social situations.

Two possible interpretations arise. Either people can feel somewhat lonely and still feel satisfied with their social situations, or it is easier to admit to being slightly lonely than it is to admit being somewhat dissatisfied socially.

Correlations of self-ratings of loneliness and social satisfaction with other loneliness measures also pointed to some differences between them. Self-rated loneliness was more highly correlated with the ULS than was self-rated social satisfaction. While both had similar correlations with the DLS, closer analysis revealed differences in two subscales. Dissatisfaction with friendships correlated more highly with self-rated loneliness than with self-rated general dissatisfaction, while the opposite was true of dissatisfaction with family relations. Thus, those feeling a deficiency in friendships were more likely to acknowledge feelings of loneliness than those experiencing deficits in family relations. Those feeling family deficits were more likely to describe their experience as essentially social dissatisfaction.

While the two general self-ratings were found to be quite similar in most respects, they were not equivalent. It is therefore recommended that researchers use caution in selecting a form of direct inquiry as a criterion for loneliness. Even more desirable would be the adoption and use of a standard format for making direct inquiries about loneliness. For example, "How lonely do you usually feel?" is the simplest and most

direct form of the inquiry, and would avoid the influence of extraneous factors such as social comparison processes ("...compared to others").

Dimensional Self-ratings

The four relational dimensions of the DLS were explored independently with the use of self-ratings of desired change (dissatisfaction) in each. The greatest dissatisfaction was with romantic/sexual relationships, with men being even more dissatisfied than women. The least dissatisfaction was with family relationships.

As criteria for dissatisfaction in each of the relational dimensions, the self-ratings varied across dimensions in how specifically they represented their dimensions. Subjects don't necessarily think of each type of relationship in the same way that researchers do. The romantic/sexual dimension appears to be commonly defined and straightforward enough to be easily reportable, although not entirely distinct from the friendship dimension. It is likely that romantic/sexual partners frequently fulfill a friendship role.

The friendship dimension is quite general, and friendship seems to be relevant to most other types of relationships. It seems to be thought of not just as a discrete, distinct type of relationship, but also as a component of other types of relationships. The family dimension is perceived in a similar way, with the family also serving both friendship and community functions.

The friendship and family dimensions are each quite specific in composition, and there is a shared general understanding of what each entails. For example, although there is some variation, most people

interpret what "family relationships" are in similar ways. The same is not true, however, of "community ties". The community dimension is apparently difficult for many people to define for themselves and to evaluate. In fact, according to the present results, very little distinction was made between community ties and friendships. Asking people to rate their community ties, therefore, does not seem to be a reliable way of evaluating the community dimension, because there is no common agreement as to what constitutes community ties.

Implications for Working With Loneliness

Some indication of subjects' perception of loneliness and conceptions about loneliness can be found in their self-ratings. Self-ratings in each of the four relational dimensions were compared with all other measures of loneliness. Loneliness scale scores (both ULS and DLS) were most highly correlated with self-rated dissatisfaction with friendships. However, general self-ratings (both loneliness or social satisfaction) were most highly correlated with self-rated dissatisfaction with romantic relationships. Thus, even though friendship may have the greatest influence on the general sense of loneliness, when people endeavor to rate or label themselves as lonely, their primary consideration seems to be their romantic/sexual relationships. They seem to pay little attention to their family relationships.

Of the four relational dimensions explored in this study, romantic/sexual relationships generally ranked third in importance to feelings of loneliness. However, there seems to be a popular belief which equates loneliness with deficient romantic/sexual relationships. This

belief could, according to the present findings, be quite misleading to the lonely person. It could lead people to expend their energy searching for a romantic/sexual relationship and overlook other types of relationships which may be more easily available to them and even more satisfying. It could also lead to confusion and self-condemnation for those who have satisfactory romantic/sexual relations and can't understand why they don't feel totally satisfied, why they still experience feelings of loneliness. It is therefore very important that the significance of other types of relationships, particularly friendships and community ties, be recognized and emphasized in work with lonely people. Efforts in establishing these types of relationships are most likely to be productive in overcoming loneliness. In fact, friendships and community ties may be the most effective prerequisites for developing secure and successful intimate relations.

According to Weiss (1973), in developing close interpersonal relationships (romantic/sexual), it is very important to have a sense of community, of fitting in somewhere. One needs a secure social base, he asserted, from which to operate socially. In describing the advantages of such a base in establishing secure relationships, Weiss explained "In general, relationships that are imbedded in one's community begin with some mutual assurance of the other's trustworthiness" (p. 194).

Middlebrook (1980) listed five requirements for developing a satisfying relationship: 1) frequent and informal interactions, 2) honest self-disclosure, 3) touching, 4) a series of pleasant, rewarding experiences, and 5) fairness; the feeling that, over time, one gets as much as one gives. An established social community is the most conducive environment for satisfying these requirements.

Exclusively searching for romantic/sexual attachment is risky, since it usually involves looking outside one's social context or community and meeting others outside of theirs. In such a situation there is little opportunity or likelihood of meeting the above requirements and thus a low chance of success. It is therefore likely a poor strategy to invest a lot of energy in "finding someone". A much more constructive approach would be to put one's energy into projects, friendships, community and group activities; in other words, developing valid social networks.

Additional Comparisons Using Loneliness Measures

The information obtained in the comparison of the two loneliness scales enabled explorations to be made into additional areas of interest. The results of these explorations will now be reviewed and discussed.

Feelings of Attractiveness

Loneliness was found to be significantly related to how attractive one feels. Two possible explanations arise. Either attractive people are less lonely, or lonely people feel less attractive. It seems likely that both of these possibilities contribute to the relationship between loneliness and attractiveness. Physical attractiveness is known to be a powerful variable in social popularity, making it generally easier for attractive people to enter into new relationships of all kinds. Alternately, it is also well known that social success leads to feelings of enhanced self-esteem and attractiveness, while social failure has the opposite effect. Thus attractiveness may lead to more opportunities for

successful relationships, and successful relationships lead to increased feelings of attractiveness.

While most subjects thought of themselves as being of average attractiveness, a few labelled themselves "unattractive". Presumably, subjects who would label themselves "unattractive" would have unusually low self-esteem. Since low self-esteem is known to be an inhibiting factor in social behavior, such people would likely have great difficulty in establishing or maintaining relationships.

Although the relationship between loneliness and feelings of attractiveness may not be surprising, it does suggest a strategy for lonely people to adopt. It would seem very worthwhile for lonely people to put extra effort into improving their general appearance. This strategy may enhance their attractiveness to others, increasing the number of opportunities for new relationships to be established. More importantly, however, it will likely increase their self-esteem, or at least prevent it from being eroded by the experience of loneliness. This factor is of great importance, since the loss of self-esteem which often accompanies loneliness can be socially debilitating and thereby prolong the experience (Weiss, 1973; Gordon, 1976).

Academic Performance and Loneliness

The conceptual model of loneliness presented in Chapter I stated that loneliness is a prominent and compelling force in a person's experience. Being preoccupied with social considerations, lonely students were considered likely to have difficulty concentrating in non-social activities. It was hypothesized that this distractibility would be detrimental to academic performance.

This hypothesis was not supported in the present results. No relationship was found between loneliness and academic performance, on any of the loneliness measures. Students at all levels of academic performance appear to be equally vulnerable to periods of loneliness.

The lack of such a relationship does not necessarily indicate that lonely students do not have concentration difficulties. It seems probable that academic performance is not an adequate measure of distractibility. Even though lonely students may experience heightened distractibility, socially active students may also have academic handicaps. For example, they may find themselves with little time or motivation to study.

It is apparent that academic performance is dependent upon a large number of factors, and thus unlikely to reflect the effects of a single variable such as loneliness. It is predicted that a more direct measure of distractibility would show that lonely subjects were more easily distracted; especially by social stimuli, than other subjects. Further research is required to test this prediction.

Recent Changes in Social Situation

The conceptual model described in Chapter I stated that the perception of relational deficit is a result of a discrepancy between achieved and desired relations. The perception of relational deficit increases when achieved relations decrease or when desired relations increase. When subjects report that their social situations have recently changed for the worse, it is a direct indication that their perception of relational deficit has recently increased. The increase in this case is due to a decrease in achieved relations.

It was hypothesized, on the basis of this model, that subjects who reported a recent change for the better in their social situations, such as the formation of a new relationship, or the strengthening of an old one, would also report less loneliness. Likewise, those reporting a recent change for the worse, such as the breakup of a love relationship or moving to a new community, were expected to report more. The present results were consistent with the conceptual model. Those who had recently undergone a change for the worse reported greater loneliness on both scales and self-ratings. These findings also lend support to the construct validity of the two loneliness scales in that both made assessments which were consistent with the conceptual model of loneliness.

Gender Differences

Differences in emotional and somatic Complaints. In trying to account for sex differences which had been found in self-rated loneliness, Borys et al. (1982) suggested that these may be due to differences in characteristic reactions to stressful situations. They suggested that women may respond with emotional complaints, whereas men may want to avoid indicating emotional "weakness" and respond with comparatively more somatic complaints. If this was the case, they reasoned, lonely men would be less likely to report loneliness when asked directly.

The present results did not support the notion that men present fewer emotional and more somatic complaints. In fact, it was found that men indicated fewer of both types of complaints than women. This finding was obtained in spite of the fact that men generally reported more loneliness than women. The idea that women may generally be under more stress than men in our society was discussed earlier as a possible

explanation of this finding. According to the present results, while women may be under more stress, men may generally be lonelier.

Differences in loneliness. Consistent with the preliminary reports of the authors of each scale (Russell et al., 1980; Schmidt & Sermat, 1983), sex differences were found with both the ULS and the DLS, with the scores of men indicating greater loneliness than those of women. Romantic/sexual subscale scores, in which men scored significantly higher than women, contributed the most to the sex difference found in the DLS total scores. Other subscales also contributed, but only slightly. Thus the sex differences obtained with this instrument were primarily due to men reporting greater dissatisfaction with their romantic/sexual relationships.

Sex differences were also found in self-rated social satisfaction and in self-rated dissatisfaction with romantic/sexual relationships. Again, men rated themselves more dissatisfied. The consistency across measures of the present findings of sex differences contrasts sharply with the inconsistencies of the findings reported in the literature. While sex differences in ULS scores were initially reported by Russell et al., the finding of such differences has since been reported to be rare in research using the ULS, and studies using other measures have conflicted with each other in their reporting of sex differences (Borys et al., 1982). The inconsistency of these previous findings led Borys et al. to conclude that sex differences in loneliness may be "measure specific"; that is, some measures will likely obtain them and others likely will not.

In the present study, three different measures indicated that males were lonelier than females. The measure with which no sex difference was

found (srL) is one specified by Borys et al. as usually indicating less loneliness reported by men than by women. If men tend to underplay their loneliness on this measure, then they would have to be lonelier in order for their ratings to be equal to those of women.. Thus, the men in this sample were found to report more loneliness than the women across all measures, and to underplay it on a direct self-rating of loneliness.

While the present findings provide evidence of a sex difference in loneliness, further research is required in order to determine whether these findings reflect a true gender difference in loneliness, or whether the difference is merely a function of the measures used.

The Loneliness of University Students: A General Summary.

The results of the present study appear essentially to substantiate the construct validity of the two loneliness scales employed. Several conclusions can be drawn from these results.

First, loneliness is a serious and pervasive problem among university students, with twenty-seven percent rating themselves as lonely to some extent. Students were found to be most dissatisfied and preoccupied with romantic/sexual relationships. Friendships were the second greatest source of dissatisfaction and the most important determinant of general loneliness. Family relations were the least important determinants of loneliness, and elicited the least amount of dissatisfaction.

Second, lonely students are more likely than others to suffer emotional types of stress-related symptoms, such as feelings of worthlessness, anxiety or fear, but no more likely to suffer from somatic problems. They are more likely to perceive others around them to be more socially

satisfied than they, or to perceive themselves as being less satisfied presently than they remember being a year ago. Their grades are equally likely to be high or low.

Third, foreign students are generally lonelier than native students, and perceive their community ties to be especially deficient. They are also more likely to be actively involved in social organizations (usually involving others from their own culture).

Fourth, male students are generally lonelier than female students, but may not indicate so on a direct self-rating of loneliness. Males are more likely than females to be especially dissatisfied with their romantic/sexual relationships.

Finally, lonely students are likely to consider themselves to be less attractive than are other students. They are also likely to have recently gone through what they consider to be a change for the worse in their social situations.

Concluding Remarks

Loneliness research has gained increasing attention in recent years. Early research in the area was hindered by the lack of valid and reliable measures with which to assess this construct. The present study has examined two important measures of loneliness, the UCLA Loneliness Scale, and the Differential Loneliness Scale. The present results generally confirmed the capability of both scales for serving as valid primary tools in the investigation of loneliness.

As the dominant loneliness measure now in use, the UCLA scale is deserving of the acceptance it has received, and should continue to

contribute to the area. The newly developed Differential Loneliness Scale has yet to receive widespread recognition. On the basis of the present results, however, it clearly deserves such recognition. The multidimensional nature of this scale enables a new depth of investigation to be undertaken which exceeds that of the unidimensional approach.

It is hoped that the present results and information will facilitate greater and more informed use of the loneliness scales examined above. These instruments appear to offer a sound basis for an empirical investigation into the distressing experience of loneliness.

APPENDIX A

PROBLEMS LINKED TO LONELINESS

Loneliness has been linked to a variety of serious individual and social problems, including the following:

- adolescent delinquent behavior (Brannan & Auslander, in Russell et. al., 1979)
- aggressive tendencies (see Perlman & Peplau, 1982)
- alcoholism (Young, 1981; Loucks, 1980)
- anomia (Sadler & Johnson, 1980; Belcher, 1973 ; Jones et. al., 1981)
- anxiety (Perlman et. al., 1979; Loucks, 1980; Young, 1981)
- depression (Weeks et. al., 1980; Bragg, 1979 ; Sadler, 1978)
- excessive drug use (Young, 1981)
- inhibited sociability (Horowits, & French, 1979)
- loss of self-esteem (Weiss, 1973; Gordon, 1976)
- overeating (Hoover et. al., 1979)
- overutilization of healthcare services (Lynch, 1977)
- physical illness, particularly heart disease (Lynch, 1977)
- psychopathology, neurosis and general maladjustment (Fromm-Reichman, 1959; Loucks, 1981; Goswick & Jones, 1981)
- psychosomatic symptoms, such as headaches, poor appetite, feeling tired (Rubenstein & Shaver, 1980)
- stress (Lynch, 1977, Rubenstein & Shaver, 1980)
- suicide (Perlman & Peplau, 1982 ; Loucks, 1980)

APPENDIX B

DISTINCTION BETWEEN DEPRESSION AND LONELINESS

Depression is one of the most common mental health problems associated with loneliness. The two are frequently correlated. Bragg (1979) proposed a distinction between "depressed loneliness" and "nondepressed loneliness". He found depressed loneliness was associated with fairly global negativity, seen in dissatisfaction with social relations, school, work, and many facets of life. In contrast, non-depressed lonely people expressed dissatisfaction only with their social relationships. They were not necessarily unhappy about other aspects of their lives.

In reviewing the distinction between depression and loneliness, it is important to point out that not all lonely people are depressed. It seems likely that depression is more common when severe loneliness persists over time. Cognitive processes may also influence the loneliness-depression link. Lonely people who blame themselves for their social problems and who attribute their loneliness to unchangeable factors may be most prone to depression. Also, not all depressed people are lonely. Depression can stem from many factors including but not limited to social deficits.

A further distinction can be seen in the observation that loneliness often disappears abruptly when a relational deficit is overcome (i.e. a satisfying relationship is found or established). Depression, on the other hand, generally does not disappear quickly, but tends

rather to subside gradually.

Thus, while depression and loneliness frequently coexist and measures of each tend to correlate, they are clearly separate and different experiences.

APPENDIX C

EXISTENTIAL LONELINESS

Existential loneliness is a label given to an experience which must be distinguished from the experience under investigation in this study. Existential loneliness is described as the realization of one's basic separateness from others, and it is said that such loneliness is inherent in human existence.

Gordon (1976) makes the following distinction between existential and other forms of loneliness:

> For most, the sense of Existential loneliness is not felt as a constant state, but rather comes in disconnected flashes - moments when one feels totally alone. But these moments do not necessarily compromise the totality of one's existence or the meaning of one's contact with others. The moments pass and one returns to whatever connections one has with others." (p.38).

Gordon goes on to say that we can accept our own separateness and still have important and close relationships with others. Accepting this aloneness, she adds, can be used as a significant resource for growth, pushing one to new searching, awareness and inspiration. This is what Moustakas (1961) and other existential writers have referred to as "existential loneliness", and is fundamentally different from other forms of loneliness. These writings often concern the positive effects of aloneness, and the significance of solitude as a self-renewing experience. While one may choose to be alone or have solitude, one does not choose to be lonely. Loneliness, especially extended loneliness, simply does not present any redeeming features to the lonely person (Weiss, 1973).

APPENDIX D

QUESTIONNAIRE ADMINISTERED

DEPARTMENT OF PSYCHOLOGY

UNIVERSITY OF WINDSOR

ALL RESPONSES ARE AND WILL REMAIN

STRICTLY CONFIDENTIAL

The following questionnaire is part of a doctoral research project being undertaken at the University of Windsor. The questionnaire is generally concerned with your life and living situation as a university student. A large number of students are taking part in this study, and your participation will help to provide important information about an area relevant to everyone: social life. The results of this study will be made available to you later in the term.

You may find some questions rather personal. Absolutely no-one but the researcher will see your answers, and he will not know which answers are yours. Your responses are anonymous, so please answer honestly.

The questionnaire should take about 25 or 30 minutes to complete. Please answer every question. There are no "right" or "wrong" answers. If uncertain how to answer a question, just refer back to the instructions and estimate or guess the best you can.

Your contribution to this research is greatly appreciated. I hope it will be an interesting learning experience for you.

Gerald Darcie, M.A.

Note: DLS items are numbered 55 - 81 in the following questionnaire. The 20 items comprising V20 are marked " * ".

Please do not put your name on this questionnaire.

Instructions: Circle the number for the answer which best applies to you.
-e.g., if your average grade is B+ or B-, Grade: 1) A
(2) B
3) C
4) D

1. Age: ____ 2. Sex: 1) M
2) F

3. Marital status: 1) Single
2) Married
3) Widowed
4) Separated/divorced

4. Present living arrangement:
1) With spouse or partner
2) With parents or relatives
3) Alone
4) With others off campus
5) In residence, on or near campus

5. Distance between your parent's home and your present place of residence: 1) near
2) under 50 kms.
3) between 50-500 kms.
4) over 500 kms.

6. Present student status:
1) full-time
2) part-time

7. Citizenship: 1) Canadian or American
2) Other (specify) _____

8. If you are a foreign student, how long have you been in Canada? 1) 6 months or less (since Aug./82 or later)
2) 7-12 months
3) 1-2 years
4) over 2 years

9. Are you an active member of any social organization (e.g. IVCF, CARRIGA, CSA, C.C., MSS, GSS, etc.)?
1) No
2) Yes (specify) _____

10. Present average grade: 1) A
2) B
3) C
4) D

11. Average grade last school year: 1) A
2) B
3) C
4) D

12. Average grade you hope to have at the end of this year:
1) A
2) B
3) C
4) D

13. Were you a student at the University of Windsor last year (01/82)? 1) Yes
2) No

PLEASE KEEP YOUR RESPONSES CONFIDENTIAL.

How much have each of the following problems bothered you during the past year? Use the scale described here:

1 = Not at all
2 = A little bit
3 = Quite a lot
4 = A lot

		Not at all			A lot
14.	Headaches	1	2	3	4
15.	Loss of interest in sex	1	2	3	4
16.	Digestive problems or bowel problems	1	2	3	4
17.	Pains in heart or chest or heart irregularities	1	2	3	4
18.	Feeling tired or low in energy	1	2	3	4
19.	Poor appetite	1	2	3	4
20.	Crying spells	1	2	3	4
21.	Feeling irritable or angry	1	2	3	4
22.	Constant worry and anxiety	1	2	3	4
23.	Irrational fears	1	2	3	4
24.	Trouble falling asleep or staying asleep	1	2	3	4
25.	Trouble getting your breath	1	2	3	4
26.	Being overweight	1	2	3	4
27.	Feelings of worthlessness	1	2	3	4
28.	Feelings of guilt	1	2	3	4
29.	Trouble concentrating	1	2	3	4
30.	Feeling that you just can't go on	1	2	3	4
31.	Stomach aches	1	2	3	4
32.	Neck or back pains	1	2	3	4
33.	Anemia	1	2	3	4

34. How many times have you seen a doctor or other helping professional regarding the above problems in the last year?
1 = 0-2
2 = 3-6
3 = 7-12
4 = over 12

PLEASE KEEP YOUR RESPONSES CONFIDENTIAL

Indicate how often you feel the way described in each of the following statements. Circle one number for each.

1=Never 2=Rarely 3=Sometimes 4=Often

Please read each statement carefully.

	How often is this true?:	NEVER	RARELY	SOMETIMES	OFTEN
35.	I feel in tune with the people around me	1	2	3	4
36.	I lack companionship.....	1	2	3	4
37.	There is no one I can turn to....	1	2	3	4
38.	I do not feel alone.....	1	2	3	4
39.	I feel part of a group of friends.....	1	2	3	4
40.	I have a lot in common with the people around me.....	1	2	3	4
41.	I am no longer close to anyone...	1	2	3	4
42.	My interests and ideas are not shared by those around me.....	1	2	3	4
43.	I am an outgoing person.....	1	2	3	4
44.	There are people I feel close to.....	1	2	3	4
45.	I feel left out.....	1	2	3	4
46.	My social relationships are superficial.....	1	2	3	4
47.	No one really knows me well.....	1	2	3	4
48.	I feel isolated from others.....	1	2	3	4
49.	I can find companionship when I want it.....	1	2	3	4
50.	There are people who really understand me.....	1	2	3	4
51.	I am unhappy being so withdrawn.....	1	2	3	4
52.	People are around me but not with me.....	1	2	3	4
53.	There are people I can talk to...	1	2	3	4
54.	There are people I can turn to...	1	2	3	4

For each statement below, decide whether or not it describes you or your situation. If it does seem to describe you or your situation, mark it TRUE by circling T.
If not, mark it FALSE by circling F.
If an item does not apply to you because you are currently not involved in the situation it describes, e.g. a current romantic or marital relationship, then score it false (F).

		TRUE	FALSE
* 55.	I feel close to members of my family.....	T	F
56.	I have a lover or spouse (boyfriend, girlfriend, husband or wife) with whom I can discuss my important problems and worries.....	T	F
* 57.	I feel I really do not have much in common with the larger community in which I live....	T	F
* 58.	I have good friends living near me.....	T	F
* 59.	I have little contact with members of my family.....	T	F
* 60.	I usually have no trouble finding a friend to accompany me if I want to go somewhere.....	T	F
* 61.	I do not get enough physical affection.....	T	F
62.	I know people in my community who understand and share my views and beliefs.....	T	F
* 63.	My lover or spouse senses when I am troubled and encourages me to talk about it.....	T	F
* 64.	I have very few friends with whom I can have an honest and open talk.....	T	F
65.	I am now involved in a romantic or marital relationship where both of us are making a genuine effort at co-operation.....	T	F
* 66.	I have a good relationship with most members of my immediate family.....	T	F
* 67.	I do not feel that I can turn to my friends living around me for help when I need it.....	T	F
* 68.	Good things seldom last in my romantic relationships.....	T	F
* 69.	No one in the community where I live seems to care much about me.....	T	F
* 70.	Members of my family give me the kind of support that I need.....	T	F
71.	I allow myself to become close to my friends...	T	F
* 72.	I seldom get the emotional security I need from a good romantic or sexual relationship....	T	F

		TRUE	FALSE
* 73.	I feel that I have "roots" (a sense of belonging) in the larger community or neighbourhood I live in.....	T	F
* 74.	I do not have many friends in the city where I live.....	T	F
* 75.	My romantic or marital partner gives me much support and encouragement.....	T	F
76.	My family seldom really listens to what I say..	T	F
* 77.	I get plenty of help and support from my friends.....	T	F
* 78.	I do not have any neighbours who would help me out in a time of need.....	T	F
79.	Few of my friends understand me the way I want to be understood.....	T	F
* 80.	I do not get along well with my family.....	T	F
81.	I feel valued and respected in my current romantic or marital relationship.....	T	F

Please indicate your answers to the following questions by circling a number on the seven-point scale provided. The scale ranges from 1, which means quite satisfied, to 7, which means quite dissatisfied.
e.g., less than "Quite" but more than "Somewhat" satisfied, circle 2.

82. How satisfied do the people you see the most seem to be with their social situations?

Quite Satisfied — Somewhat — Somewhat Dissatisfied — Quite Dissatisfied

1 — 2 — 3 — 4 — 5 — 6 — 7

83. How satisfied were you with your social situation last year?

Quite Satisfied — Somewhat — Somewhat Dissatisfied — Quite Dissatisfied

1 — 2 — 3 — 4 — 5 — 6 — 7

84. How satisfied are you with your present social situation?

Quite Satisfied — Somewhat — Somewhat Dissatisfied — Quite Dissatisfied

1 — 2 — 3 — 4 — 5 — 6 — 7

PLEASE KEEP YOUR RESPONSES CONFIDENTIAL

Most people can see room for improvement in some of their relationships. Different kinds of relationships are listed below. Please indicate the amount of change you would like to see in each one by circling the number between 1 and 7 which best describes your situation.

Guide - 1 = A lot; things could be much better.
- 3 = Some; some improvement would be nice.
- 5 = A bit; pretty good, but could be a bit better.
- 7 = None; things are just how I want them.

(Use these numbers as a guide, but feel free to choose the ones in between if you like.)

How much change would you like to see in:

85. Your romantic/dating relationship(s)?

A lot — Some — A bit — None

1 — 2 — 3 — 4 — 5 — 6 — 7

86. Your friendships?

A lot — Some — A bit — None

1 — 2 — 3 — 4 — 5 — 6 — 7

87. Your family relationships?

A lot — Some — A bit — None

1 — 2 — 3 — 4 — 5 — 6 — 7

88. Your community ties? (i.e. sense of belonging, involvement)

A lot — Some — A bit — None

1 — 2 — 3 — 4 — 5 — 6 — 7

89. How lonely do you feel at this time?

quite lonely — not at all lonely

1 — 2 — 3 — 4 — 5 — 6 — 7

90. Has your social situation changed recently?
1) No
2) Yes - If so, has this change been:
3) for the better,
or 4) for the worse?

91. Which do you consider to be primarily your orientation?
1) heterosexual
2) bisexual
3) homosexual

92. Which do you consider yourself to be?
1) attractive
2) average
3) unattractive

Thank you for your assistance.

PLEASE KEEP YOU RESPONSES CONFIDENTIAL

APPENDIX E

Comparison of the Two Abbreviated Forms of the Differential Loneliness Scale

The multidimensional DLS was administered in an abbreviated form for this study. Altogether, 27 of the original 60 items were included. These 27 items represented the aggregate of two overlapping 20-item shortened versions of the DLS. As described in Chapter I, the first abbreviated version (V5x4) was formed with the best five items from each of the four subscales within the original scale. The second abbreviated version (V20) was formed with the best 20 items overall, ignoring subscales (although subscales turned out to be almost equally represented). These two forms were compared in the present study in order to determine if one could be found to have advantages over the other.

Table E1 presents a comparison of the correlations between each version and other loneliness measures. As can be seen, the two versions correlate very highly with each other, $r = .97$. Not surprisingly, then, most correlations were very similar, with those of V20 being generally slightly higher. This difference is most pronounced in correlations with the IHS and its emotional complaints subscale. Here, V20 correlates more highly for both males and females (see Table E2).

Subscale scores were also correlated with other measures, and demonstrated one major imbalance. In the Romantic/sexual subscale (DLS)R/S, V20 had a higher correlation with the ULS, self-rated loneliness (srL), and self-rated social satisfaction (srSSat).

The two versions were also evaluated by being compared on the

Table E1

Correlations Between DLS Scores and Other Loneliness Measures.

	Loneliness Measure	DLS Version V5x4	V20
Total Scale	V5x4	1.00	.97
	V20	.97	1.00
	ULS	.74	.75
	srL	.60	.62
	srSSat	.59	.60
Subscales			
R/S	ULS	.33	.45
	srL	.39	.48
	srSSat	.41	.50
Fr	ULS	.70	.71
	srL	.48	.52
	srSSat	.39	.42
Fam	ULS	.34	.33
	srL	.17	.16
	srSSat	.29	.32
Com	ULS	.63	.58
	srL	.51	.45
	srSSat	.43	.43

basis of how well the four DLS subscales were represented in each. This was determined by correlations between the subscale scores of each version and responses to direct questions about satisfaction in each of the relational dimensions represented by the subscales. As shown in Table E3, the highest correlations between self-ratings and DLS subscale scores were found for the romantic relationships dimension in V20 (r =.64) followed by the family relationships (r =.53) and friendships (r =.52) dimensions. The lowest correlations were obtained for the community ties dimension (r =.31).

Again, the only difference between versions was a very slight advantage for V20 in the R/S dimension. Thus the two versions appeared generally equivalent in their relationships with most other significant variables. However, V20 seemed to represent more fully the R/S dimension and was also more highly correlated to symptoms of stress expected to accompany loneliness. On the basis of these differences, V20 was selected as the version to be used in the present study to represent the DLS.

Table E2

Correlations Between the IHS and Two Versions of the DLS.

	Males		Females	
	V5x4	V20	V5x4	V20
IHSTOT	.45	.49	.34	.40
IHSEMO	.46	.52	.40	.46
IHSSOM	.27	.29	.13	.19

Table E3

Correlations Between Dissatisfaction Ratings in Each Relational Dimension and Corresponding Subscale Scores.

(e.g., srR/S with DLS-R/S)

	Relational Dimensions			
DLS Version	R/S	Fr	Fam	Com
V5x4	.60	.51	.54	.30
V20	.64	.52	.53	.31

APPENDIX F

Culture and DLS Subscales

Discriminant Analysis

Because foreign students scored significantly higher on the DLS, a discriminant-function analysis was performed on the DLS subscales to determine how well each was able to discriminate between foreign and native students. Even though an attempt was made to compensate statistically, the large imbalance in group sizes reduces confidence in the reliability of the results, making them suggestive rather than conclusive.

They suggest that the DLS subscales do not discriminate well between foreign and native respondents. Pooled coefficients of covariance showed that not one of the subscales was graphically located further than half a standard deviation from the grand centroid of either group. On the basis of discriminant function classification, 93.27 percent of the total sample were classified in the native group, which actually comprised only 78 percent of the total sample. Although 95.71 percent of the native group were classified correctly, only 15.56 percent of the foreign group were. Thus, in a discrimination between unbalanced groups, the DLS subscales alone were not able to reliably identify foreign students.

Regression Analysis

Regression analysis indicated that, of the DLS subscales, only the Community subscale showed significant differences between foreign and native students, with Type IV sum of squares yielding F (1, 206) = 6.57, $p < .01$. As seen in Table F1, none of the other three subscales

approached significance.

Thus, only the Community subscale was able to differentiate between foreign and native students. The Family, Friendship, and Romantic/sexual subscales did not contribute significantly to the differentiation.

Table F1

Foreign vs. Native Regression Analysis By DLS Subscales

Source	df.	Type IV SS	F Value	Prob > F
DLS-Com	1	1.057	6.57	0.01
DLS-Fam	1	0.069	0.43	0.51
DLS-Fr	1	0.035	0.22	0.64
DLS-R/S	1	0.004	0.02	0.88

APPENDIX G

An Additional Validation Procedure for the Two Loneliness Scales.

The total sample was randomly divided into two groups, A and B, each with an N of 104. A comparison shows good consistency in correlations between the two scales and the DLS subscales.

Table G1

Half and Full Sample Correlation Coefficients.

		N	DLS	DLS-R/S	DLS-Fr	DLS-Fam	DLS-Com
ULS	Group A	104	.75	.42	.72	.37	.56
	Group B	104	.76	.48	.72	.29	.65
	Total	208	.75	.45	.71	.33	.60
DLS	Group A	104	--	.68	.76	.56	.76
	Group B	104	--	.70	.78	.59	.79
	Total	208	--	.68	.77	.57	.77

APPENDIX H

UCLA LONELINESS SCALE: REPORTED MEANS

	N	Mean	S.D.
Present study	208	38.7	10.87
Horowitz & French, 1979	479	40.2	10.4
Solano, 1980	258	39.8	10.7
Russell et al, 1978	492	38.9	10.6
Russell et al, 1978	192	39.1	-
Russell, 1982		38.6	-
Russell et al, 1980 (Male)	120	37.06	10.91
(Female)	128	36.06	10.11

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VITA AUCTORIS

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